

METLAKATLA PENINSULA ASBESTOS INVENTORY AND ABATEMENT PLAN

FOR THE
METLAKATLA INDIAN COMMUNITY
METLAKATLA, ALASKA



RIDOLFI ENGINEERS Inc.

**METLAKATLA PENINSULA
ASBESTOS INVENTORY AND ABATEMENT PLAN**

**Prepared for
Metlakatla Indian Community
Metlakatla, Alaska**

**Prepared by
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Seattle, Washington**

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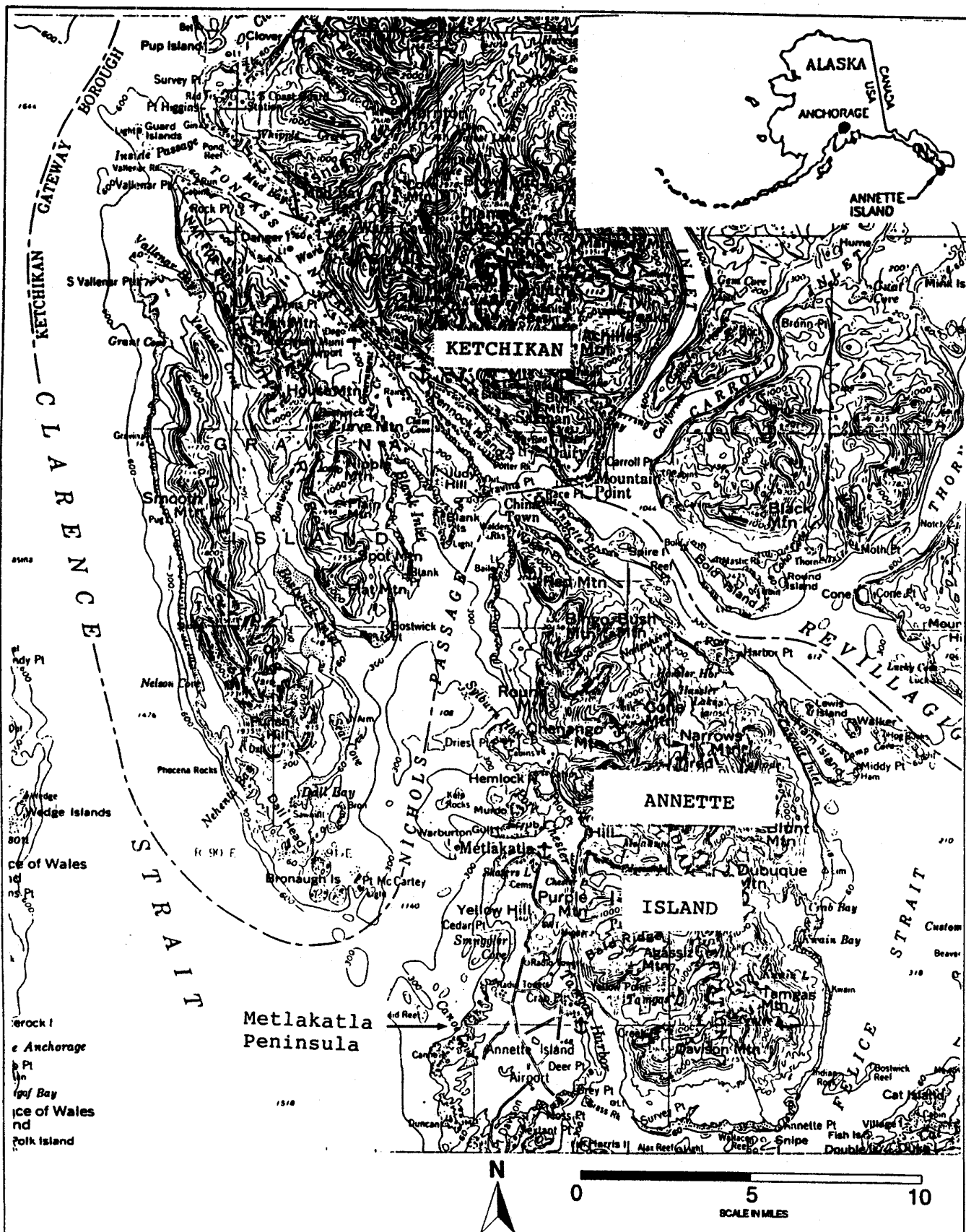
1.0 INTRODUCTION

Annette Island is an approximately 200-square-mile island located in the southernmost portion of the Alexander Archipelago in southeast Alaska. The island is located approximately 900 miles southeast of Anchorage, Alaska, and 700 miles northwest of Seattle, Washington. As shown in Figure 1, Ketchikan, Alaska, is approximately 20 miles northeast of the island.

The Metlakatla Peninsula project site, including the former Annette Island airbase, is an area approximately 8 miles long and 3 miles wide located on the southwest side of Annette Island. As shown in Figure 2, the peninsula is bordered by the saltwater bodies of Tamgas Harbor on the east, Felice Strait on the south, Clarence Strait to the west, and Port Chester on the north. The Town of Metlakatla, with a population of approximately 1,500 to 1,600 people, is located on the northern tip of the peninsula. The hangar and landing field associated with the former airbase are located approximately 6 miles south of Metlakatla.

The asbestos investigation was conducted beginning in July 1997 in the area comprising the Metlakatla Peninsula south of Yellow Hill Lake and including Yellow Hill. This area was historically used as a U.S. military base beginning in the 1940s and was later used as an airport for the Ketchikan area. The purposes of this report are to document the results of a survey of suspected asbestos-containing material (ACM) and to provide a plan for abatement and management of the ACM.

Section 2 of this report presents background information about the project site and describes the objectives of the work. Section 3 describes the methods used to conduct the inspection. Site-specific asbestos results and abatement plans are presented in Section 4. The procedures and cost estimates for the abatement work are discussed in Section 5. Recommendations are presented in Section 6. Section 7 lists the references cited in this report. Many of the technical terms used in this report are defined in the glossary that appears as Appendix A. Terms defined in the glossary are shown in *italics and boldface* on their first use in this document.

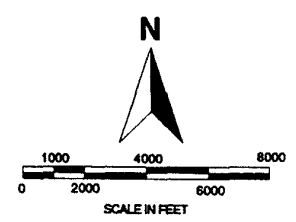
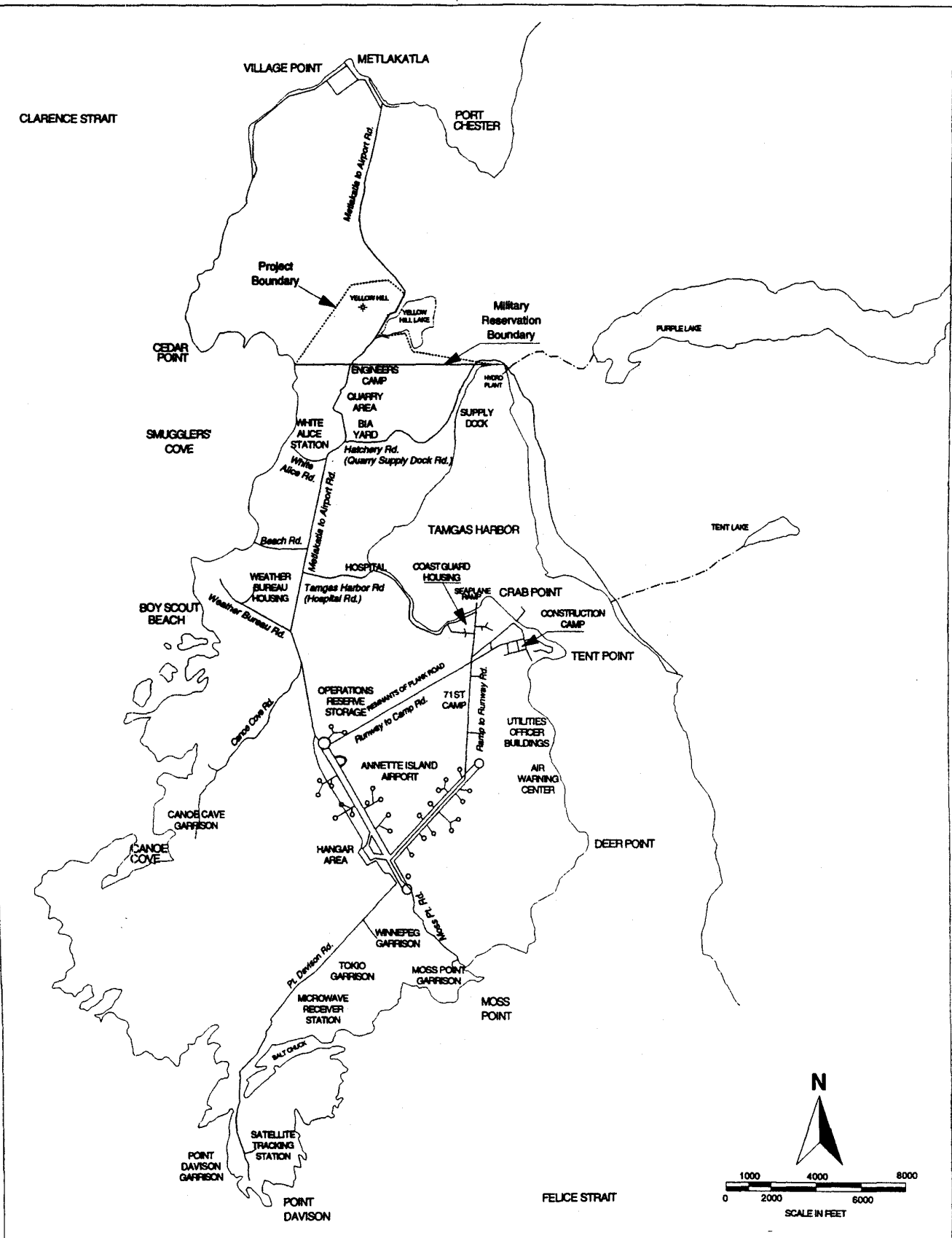


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Figure 1

Location & Vicinity Map



2.0 BACKGROUND AND OBJECTIVES

2.1 Background

Prior to conducting the asbestos investigation, a preliminary assessment was conducted in 1996. The preliminary assessment consisted of evaluating the data generated from the records review, site reconnaissance, and interviews and compiling information related to the environmental conditions at the site. The records review focused on researching and analyzing readily available information concerning the project area and its surroundings in order to understand historical site uses and identify potential areas of concern. The site reconnaissance consisted of a physical inspection of the site to corroborate research information, confirm current conditions, and collect additional information to support the assessment. Interviews were conducted with persons knowledgeable of the site history and/or operations. Areas of environmental concern were located, inspected, and photographed.

Hazardous substances such as ACM are known to be associated with former Department of Defense (DOD) and Department of Transportation facilities on the Metlakatla Peninsula. The potential exists for release of these hazardous substances into the air and the surrounding environment of the Metlakatla Peninsula. The preliminary assessment recommended that an asbestos inventory be performed and that a hazard mitigation/management plan be prepared. ACM such as thermal insulation, exterior and interior siding, roofing material, and vinyl flooring was suspected to have been used in many of the existing former DOD and Federal Aviation Administration (FAA) buildings and communication/navigation facilities.

Friable ACM (thermal pipe insulation) was found to be in very poor condition at many locations in the hangar. To reduce asbestos fiber releases and future exposure, it was recommended by OSHA that mill workers be advised on the use of respirators and *protective clothing* and informed of the procedures for working around and repairing ACM in the hangar. It was further recommended that ACM at other sites be addressed, such as friable materials exposed in debris piles at the former public school, in buildings housing steam boilers at the public school, at Annette Inn, and in the hangar, fire truck hut, and U.S. Coast Guard (USCG) quarters.

The asbestos survey was conducted in accordance with Asbestos Hazard Emergency Response Act (AHERA) requirements for inspecting friable and non-friable ACM and assessing the condition of friable ACM. The survey work was conducted under the responsible charge of a Toxic Substances Control Act (TSCA) Title II/AHERA-accredited building inspector. The abatement designs were developed according to applicable regulations and guidances by a certified AHERA project designer, in accordance with U.S. Environmental Protection Agency (EPA) 40 CFR 763, Subpart E.

2.2 Objectives

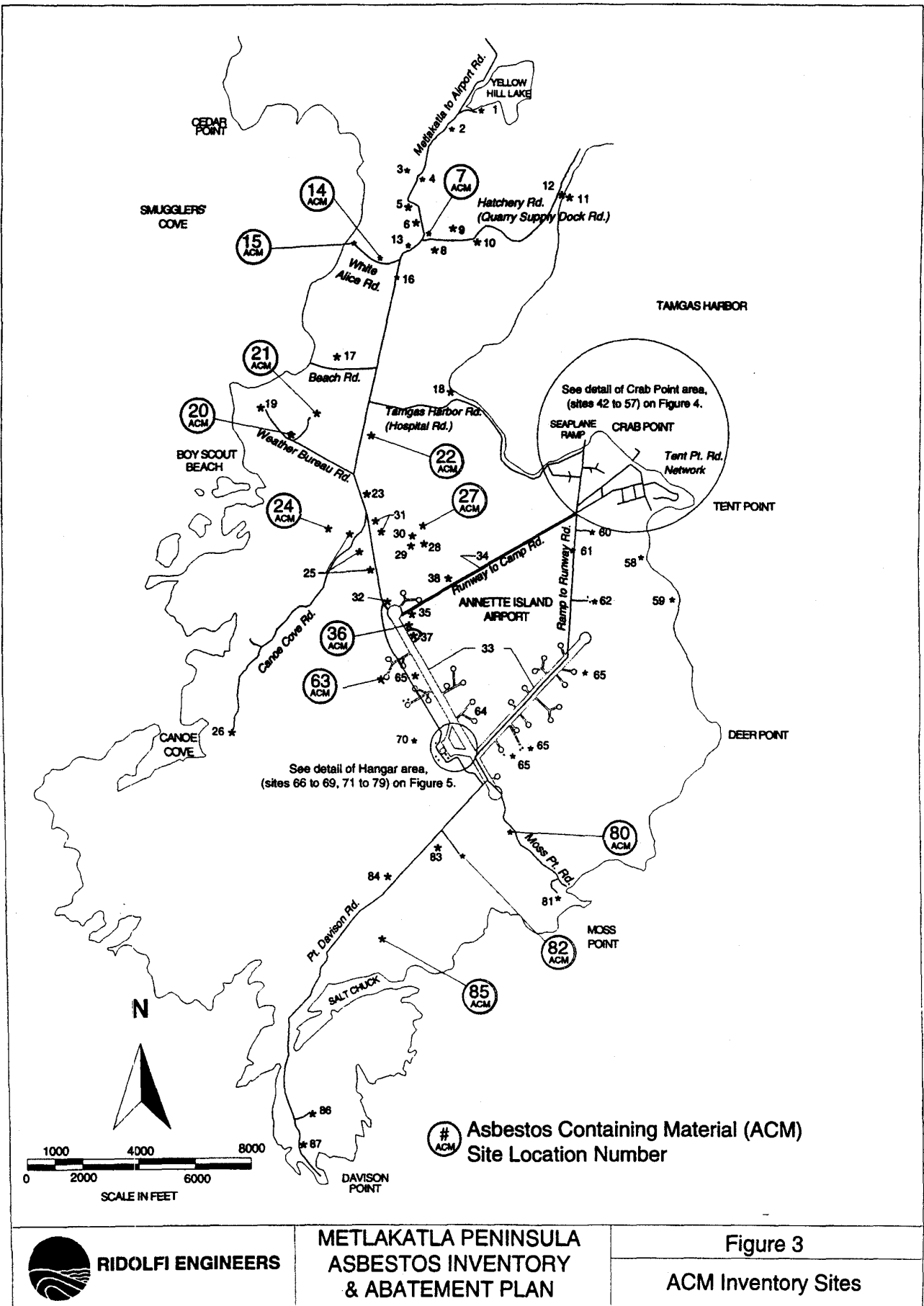
The objectives of the ACM survey were to:

- 1) Perform *visual inspections* of buildings and other structures to locate and assess the condition of the suspect ACM
- 2) Sample suspect ACM under a qualified asbestos inspector
- 3) Analyze suspect ACM through an independent laboratory
- 4) Develop an inventory of ACM at the site, including locations, material characteristics, condition, degree of damage, quantity, accessibility, and potential for disturbance

The survey included developing a field work plan; reviewing available as-built drawings; obtaining required equipment and supplies; inspecting asbestos; sampling and analysis; *air monitoring*; making field measurements for quantification; and conducting asbestos awareness training. A site-specific safety and health plan was developed for use in the asbestos survey and other field efforts conducted at the project site by Ridolfi Engineers and Associates (Ridolfi).

The sites investigated included the ACM locations of concern listed below and referred to in the preliminary assessment (Ridolfi, 1996). An inventory of the major site structures and features was provided in Table 1 of the preliminary assessment. The site locations are shown on Figures 3, 4, and 5.

<u>Site No.</u>	<u>Site Name (Comment)</u>
7	BIA Road Maintenance Center
14	Chlorination Building
15	White Alice Station
20	Weather Bureau Housing
21	Remote Control Air Ground
22	DOD AACS Station (tile flooring)
24	FAA Middle Marker Facility
27	Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC)
36	FAA Glide Slope Facility
44	USCG Housing
46	USCG Fire Station/Post Exchange
48	Main Construction Camp (building remains)
50	DOD/FAA Fire Truck Hut
53	FAA Housing Area
54	Public School
56	Pacific Northern/Western Airlines (PNA/WA) Apartments
63	DOD/FAA Remote Receiver Station
67	Weather Bureau Station
68	USCG Water Treatment Plant
69	USCG Quarters
71	USCG Garage
72	Hangar Boiler Building
75	Hangar
77	PNA/WA Terminal
80	Localizer
82	Winnipeg Garrison/Annette Inn
85	Tropospheric Relay Station

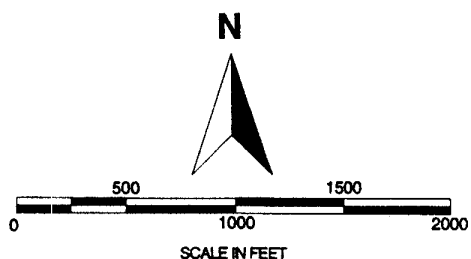
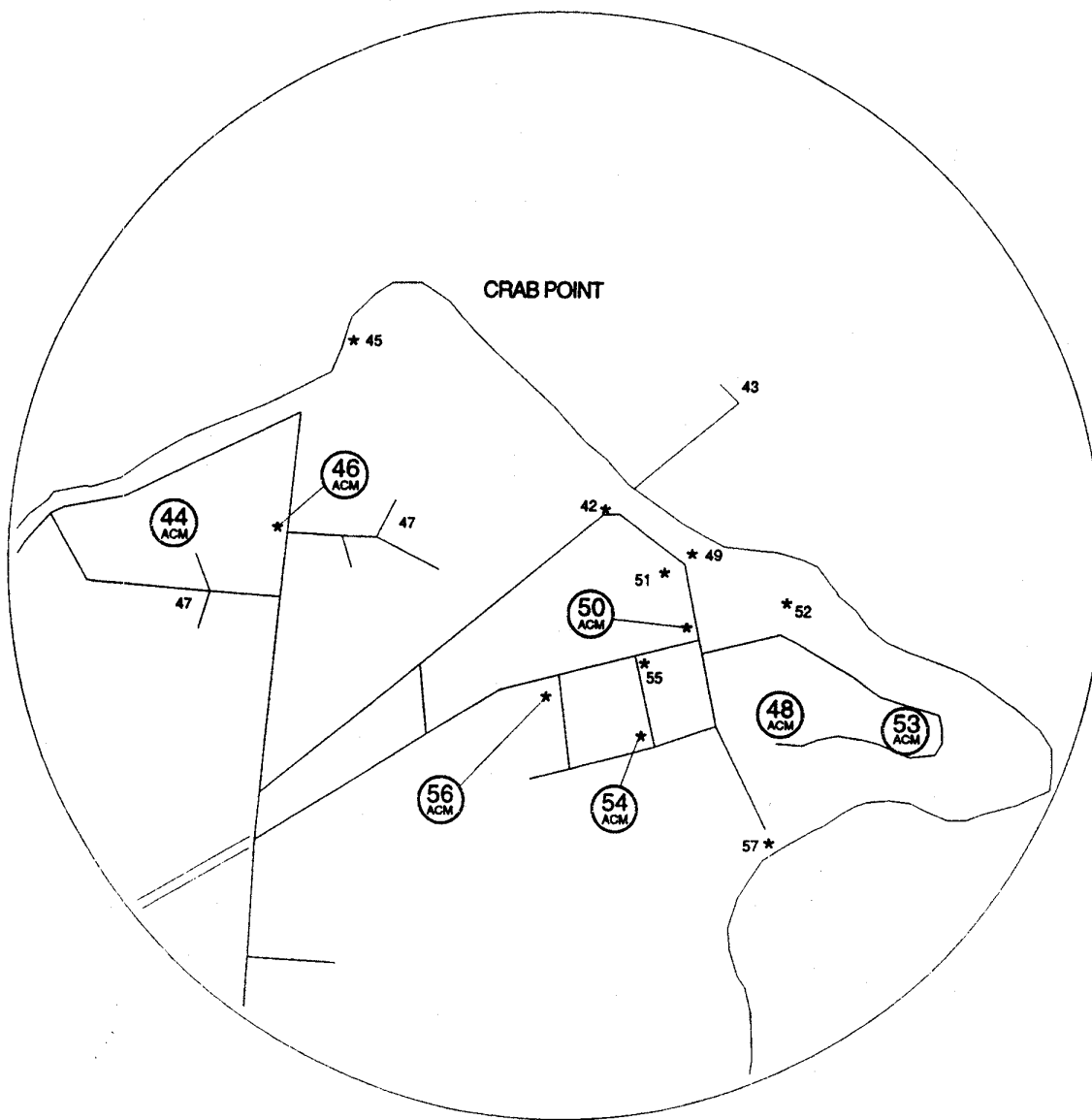


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Figure 3

ACM Inventory Sites




 Asbestos Containing Material (ACM)
 Site Location Number

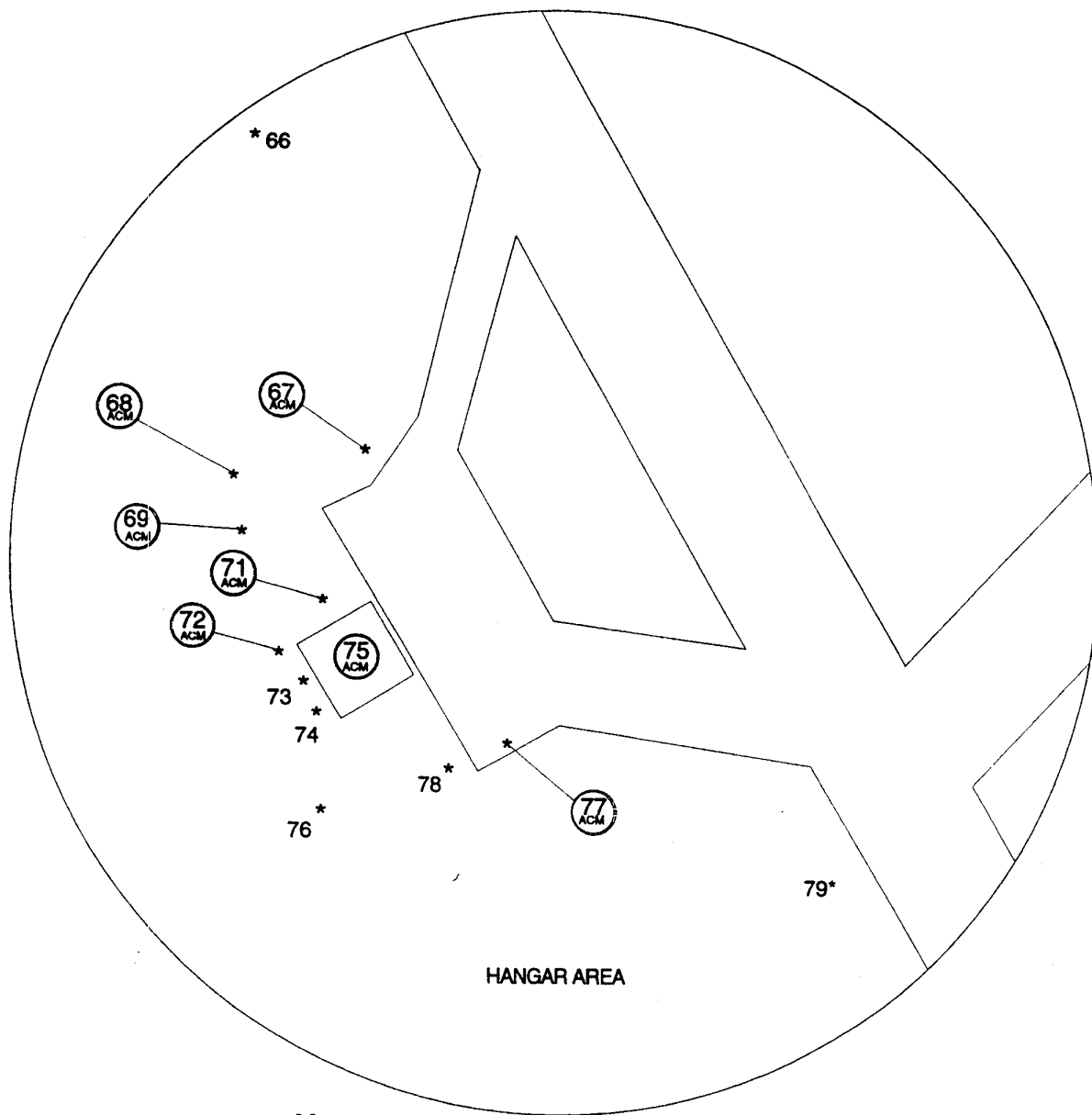


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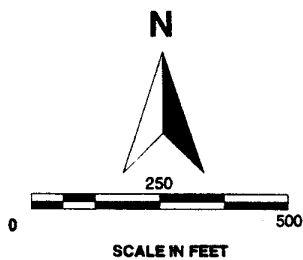
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Figure 4

Crab Point Inventory Sites



ACM Asbestos Containing Material (ACM)
Site Location Number



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Figure 5

Hangar Area Inventory Sites

3.0 INSPECTING FOR FRIABLE AND NON-FRIABLE ACM**3.1 Assessing the Condition of Friable ACM**

The inspection was conducted by an accredited asbestos inspector and included observing and touching all suspect materials; identifying the type of material; either sampling suspect materials or assuming they contained asbestos; and documenting the location of the material. The assessment included all areas where friable suspect or assumed ACM is located and areas where previously identified asbestos-containing building material (ACBM) is located. ACBM in each of the damage categories was described with respect to the type and extent of damage, the potential for disturbance, and the probable cause of damage.

The physical assessment involved describing the condition of the suspect material and the potential for its future disturbance. Material with no visible damage or deterioration, or showing only very limited damage or deterioration, was classified as being in "Good Condition." Friable materials in each area assessed were placed in one of the following seven categories by condition and potential for disturbance:

1. Damaged or significantly damaged friable thermal system insulation (TSI)
2. Damaged friable surfacing ACM
3. Significantly damaged friable surfacing ACM
4. Damaged or significantly damaged friable miscellaneous ACM
5. ACBM with potential for significant damage
6. ACBM with potential for damage
7. Any remaining friable ACBM or friable suspected ACBM

The following criteria were used to classify the condition of suspect ACM in surfacing and miscellaneous materials:

<u>Condition:</u>	<u>If one or more characteristic is present:</u>	<u>And distribution is:</u>	
		<u>Even</u>	<u>Localized</u>
Significantly Damaged	Crumbling or blistering over surface	≥ 10%	≥ 25%
	Material hanging, deteriorated, adhesive failure	≥ 10%	≥ 25%
	Water stains, gouges, or mars	≥ 10%	≥ 25%
Damaged	Surface crumbling, blistered, water stained, gouged, marred, or otherwise abraded	< 10%	< 25%

The following criteria were used to classify the condition of suspect ACM in TSI:

<u>Condition:</u>	<u>If one or more characteristic is present:</u>	<u>And distribution is:</u>	
		<u>Even</u>	<u>Localized</u>
Significantly Damaged	Missing jackets on piping or equipment	≥ 10%	N/A
	Crushed or heavily gouged or punctured insulation on pipe runs/risers, boiler, tank, duct, etc.	≥ 10%	≥ 25%
Damaged	A few water stains or insulation with missing jackets	< 10%	N/A
	Crushed insulation or water stains, gouges, punctures, or mars on insulation	< 10%	< 25%

3.2 Bulk Sample Types and Analysis

Material types and analytical methods for bulk sampling are described below.

Surfacing Material (SM): Material that is sprayed on, troweled on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing material on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.

Thermal System Insulation (TSI): Material applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation or for other purposes.

Miscellaneous Materials: Interior building material on structural components and structural members or fixtures, such as floor and ceiling tiles. Does not include SM or TSI.

Samples submitted for analysis were analyzed for asbestos by laboratories that have received interim accreditation for *polarized light microscopy* (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program, because the NBS laboratory accreditation program for PLM is not yet operational. PLM is a method of analyzing bulk samples for asbestos in which the sample is illuminated with polarized light (light that vibrates in only one plane) and viewed under a microscope. Samples were not composited for analysis.

Quality assurance (QA) samples were submitted with all the samples and sent to a single laboratory for analysis. The EPA recommends that for every twentieth bulk sample collected, a QA sample be taken immediately adjacent to the twentieth sample (field duplicates). Thus, the twentieth and twenty-first samples in every group of 20 are side-by-side samples. Each sample was labeled independently so that the identity of QA samples could not be determined except by reference to records kept by the accredited inspector. If necessary, split samples could be sent to a second laboratory and analyzed independently, as a check on analytical variability or variability of the material within the same lab.

Laboratory results for the QA samples should not disagree with the bulk analysis results with regard to the presence or absence of asbestos (i.e., 1 percent or less or more than 1 percent asbestos). Discrepancies may occur as a result of sample contamination, inconsistent

procedures, differences in technique, or mistakes (e.g., mislabeling of samples). Some variability in the "true" asbestos content of ACM is expected from one location to another. If large scale variability occurs, then the corresponding areas may require reanalysis.

3.3 Number of Samples and Locations

3.3.1 Surfacing Materials

The inspector collected, in a statistically random manner that was representative of the *homogeneous* area, bulk samples from each homogeneous area of friable SM that was not assumed to be ACM, as follows:

<u>Size of Sampling Area</u>	<u>Recommended Number of Samples to be Collected</u>	<u>Minimum Number of Samples to be Collected</u>
1,000 sq. ft. or less	9	3
>1,000 and <5,000 sq. ft.	9	5
Greater than 5,000 sq. ft.	9	7

3.3.2 Thermal System Insulation

The inspector collected, in a randomly distributed manner, at least three bulk samples from each homogeneous area of TSI that was not assumed to be ACM. Exceptions to this are as follows:

- (1) Collection of at least one bulk sample from each homogeneous area of patched TSI that was not assumed to be ACM, if the patched section was less than 6 linear or square feet.
- (2) In areas of insulating cement, collection of at least one bulk sample from each insulated mechanical system that was not assumed to be ACM, where cement or plaster was used on fittings such as tees, elbows, or valves.

3.3.3. Miscellaneous Materials

Friable Material: In a manner sufficient to determine whether material is ACM or not, the inspector collected at least one bulk sample from each homogeneous area of friable miscellaneous material that was not assumed to be ACM.

Non-Friable Material: If any homogeneous area of non-friable suspected ACBM is not assumed to be ACM, then the inspector collected, in a manner sufficient to determine whether the material is ACM or not, bulk samples (at least one) from the homogeneous area of non-friable suspected ACBM that is not assumed to be ACM.

Miscellaneous Materials: The EPA does not recommend sampling these materials. Therefore, if not sampled, they were identified and documented as suspect materials.

3.3.4 Soil Samples

Soil samples were taken at selected sites, including sites where buildings or structural elements have been removed, demolished, destroyed, or are missing. The soil samples were taken as bulk samples to confirm the presence or absence of asbestos. A grid was laid out across the site area

and broken down into nine equal areas. Small grab samples were taken from the first four randomly numbered grids of the nine areas and assembled as a four-part composite sample.

3.4 Sampling Procedures

3.4.1 Sample Documentation

Field activities were documented with indelible waterproof black ink in permanently bound field *logbooks* made of waterproof paper. The pages of the field logbooks were numbered consecutively and pages were not removed. The types of information entered into the field logbooks included, but were not limited to, the following:

- Project name, location, and number
- Rationale for collecting the sample
- Date and time of sampling
- Unique sample number incorporating existing site number
- Media sampled
- Geographical location of sampling point
- Physical location of sampling point
- Method of sampling, including procedures, equipment, and any departure from the sampling plan (including rationale for the departure)
- Results of field measurements
- Documentation of field instrument calibration and maintenance
- Sample preservation method
- Type and quantity of containers used for each sample
- Photographic information (including date and time, direction, and roll and frame numbers)
- Diagrams drawn to approximate scale showing all friable materials in the sampling area
- Name of person preparing the diagram and date prepared
- Analyses requested
- Shipping information, including airbill
- Other pertinent information

3.4.2 Field Measurements

All documentation pertinent to the calibration and/or maintenance of field instrumentation was recorded in the field logbook. Entries regarding the status of instruments included, but were not limited to, the following information:

- Date and time of calibration
- Name of person conducting calibration
- Type of equipment being serviced and identification (make, model, serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

3.4.3 Sample Collection and Identification

Samples were collected according to AHERA inspection, sampling and assessment requirements by individual site numbers (1-86) across the peninsula. The letter designation "A" indicates the sample was for asbestos analysis. Therefore, a sample number such as 63A-01 indicates the first sample (01) collected for asbestos analysis (A) at site 63 (63).

ACM bulk samples were collected in Whirl-Pak sterile bags (2 ounce capacity, 2.5 mil thick) and labeled. Soil samples were collected in Whirl-Pak sterile bags of the same size and labeled. Sample container labels contained the following information:

- Project name
- Sample identification number
- Date and time of sampling
- Name of sampling personnel
- Analyses to be performed

Immediately upon collection, ACM and suspected ACM samples were sealed in Whirl-Pak containers and placed in large Zip-Lock bags in groups of 20 along with the identifying chain of custody. QA samples (one for each group of 20) were collected along with regular samples and their numbers were noted in field logbooks. During the sampling program, the bagged samples remained in the custody of the samplers at all times. Upon completion of sampling, the samples were taken directly to the laboratory.

3.4.4 Chain-of-Custody Procedures

The primary purpose of chain-of-custody procedures is to document possession of the samples from collection through storage and analysis to reporting. Chain-of-custody forms become part of the permanent record of sample handling and shipment. Field sampling personnel were responsible for the care and security of the samples from the time of their collection until they were turned over to the shipping agent or laboratory.

Each chain-of-custody form contained the following information:

- Sample identification numbers
- Date and time of sampling
- Type of sample and number of containers associated with each sampling point
- Analytes requested
- Shipping airbill number
- Transfer of custody acknowledgment

3.4.5 Equipment Decontamination

To minimize the potential for cross contamination of samples, equipment used during sampling was decontaminated prior to use at each sampling site. For ACM bulk samples, sample tools were cleaned with prepackaged decontamination wipes between sampling events. Used wipes were collected in plastic bags for disposal off island.

Personnel in contact with soil samples wore clean nitrile gloves. Work surfaces were covered with aluminum foil. Disposal of sediment/soil and decontamination water was documented in the field logbook. The sampling equipment (bowls, spoons, spatulas) was decontaminated between stations. The decontamination procedure was as follows:

1. Rinse and brush with potable water to remove material clinging to tools
2. Wash with brush and Liquinox (non-phosphate) soap and potable water
3. Rinse with potable water
4. Final rinse with potable water
5. Air dry
6. Wrap in aluminum foil

The rinse waters and the Liquinox water were applied from plastic squeeze bottles or spray bottles to minimize volumes of decontamination water.

3.5 Sample Analysis and QA Review

Bulk samples of asbestos were analyzed using test methods specified in 40 CFR Chapter 1, Part 763, Subpart F, Appendix A. This analysis was performed by an NVLAP-accredited laboratory using PLM, a method of analyzing bulk samples for asbestos in which the sample is illuminated with polarized light.

Bulk samples of a soil matrix for asbestos were analyzed using test methods specified in 40 CFR Chapter 1, Part 763, Subpart F, Appendix A. This analysis was performed by an NVLAP-accredited laboratory using PLM.

The analytical data generated by the laboratory was checked by the laboratory for accuracy, precision, and completeness. After receipt of the data packages, Ridolfi conducted a limited independent data review. QA sample results were compared with the corresponding side-by-side sample results to determine whether reanalysis was required because of significant variability.

4.0 SITE-SPECIFIC RESULTS AND PLANS

The following information obtained during the asbestos inventory is summarized for each site in this section:

- Description of the site, including historical and current uses
- Suspect materials sampled or assumed to be ACM
- Descriptions and quantities of ACM
- Recommendations for ACM and class of abatement work required

Asbestos abatement work is regulated; it must comply with Occupational Safety and Health (OSHA) Standard 1926.1101 Subpart Z. Refer to Appendix D of this report for a copy of the OSHA standard. Asbestos work is divided into four classes. Refer to Table 1 in Section 5.1 for a summary of the provisions related to each class of abatement work. Following are brief definitions of the four classes:

- Class I: Removal of TSI and SM
- Class II: Removal of all other ACM that is not TSI or SM
- Class III: Maintenance and repair operations that disturb ACM
- Class IV: Housekeeping and custodial operations

4.1 Site 7 BIA Road Maintenance Center

Description

The operational road maintenance center comprises approximately 12 buildings, which contain offices and road maintenance equipment in a 300-foot x 350-foot area (see photograph 7). The site includes metal huts, trailers, and wood structures.

Suspect Materials

Five samples of five suspect ACMs were collected. Suspect materials included insulation batting, ceiling tiles, and roofing material. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 7-1 for sample locations.

Asbestos-Containing Materials

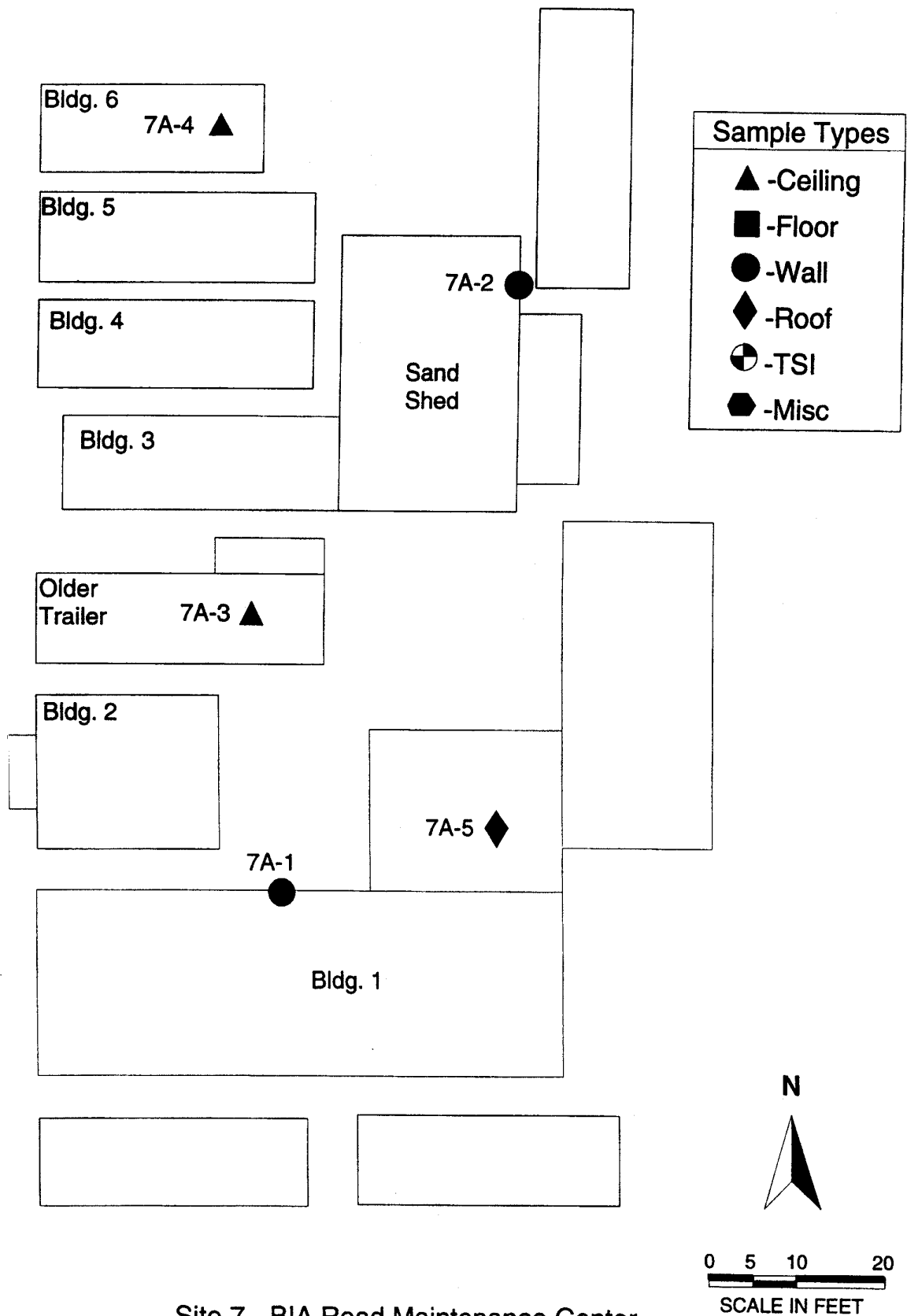
Lab results showed no asbestos present in the materials sampled at the site.

Recommendations

There is no recommended action, because no ACM was found.



Photograph 7: BIA Maintenance Center



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Figure 7-1

Asbestos Sample Locations

4.2 Site 14 Chlorination Building

Description

The chlorination building is a 10-foot x 20-foot, wood-frame structure within a fenced enclosure (see photograph 14). The building was constructed in the late 1960s as part of the steel water pipeline system that was built by the FAA to replace the DOD water pipeline that served the lower Metlakatla Peninsula. The building contains two water tanks and three types of water lines. The interior is drywall with a concrete floor. The building, fire door, and tanks have been damaged by bullet holes. A water line that is approximately 8.5 miles long distributes water from Yellow Hill Lake through the building to the lower peninsula. (Refer to Figure 14-2 for the approximate location of the water line.)

Suspect Materials

Twenty samples of seven suspect ACMs were collected. The fire doors could not be sampled without further damaging them. Suspect materials included insulation on water lines and tanks and drywall on walls and ceilings. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figures 14-1 and 14-2 for sample locations.

Asbestos-Containing Materials

The following ACMs were identified at the chlorination building:

- The water line is composite construction with an outer tar/resin/fabric cover, volcanic glass foam 3 inches thick, and a steel main line coated with a tar/resin tack coat. The interior of the water line could not be accessed for sampling or inspection. It is possible that the water line is lined with *cementitious* material; other water lines observed on the site appear to have an interior cementitious lining.
- The main water line insulation contains *chrysotile* asbestos. The steel line is in good condition, with potential for further damage from continued exposure. The insulation is failing at various locations along its length.
- The fire doors are assumed to contain asbestos.

Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
14A-8 & -20	Outside	Main Water Line Insulation	8.5	Mile

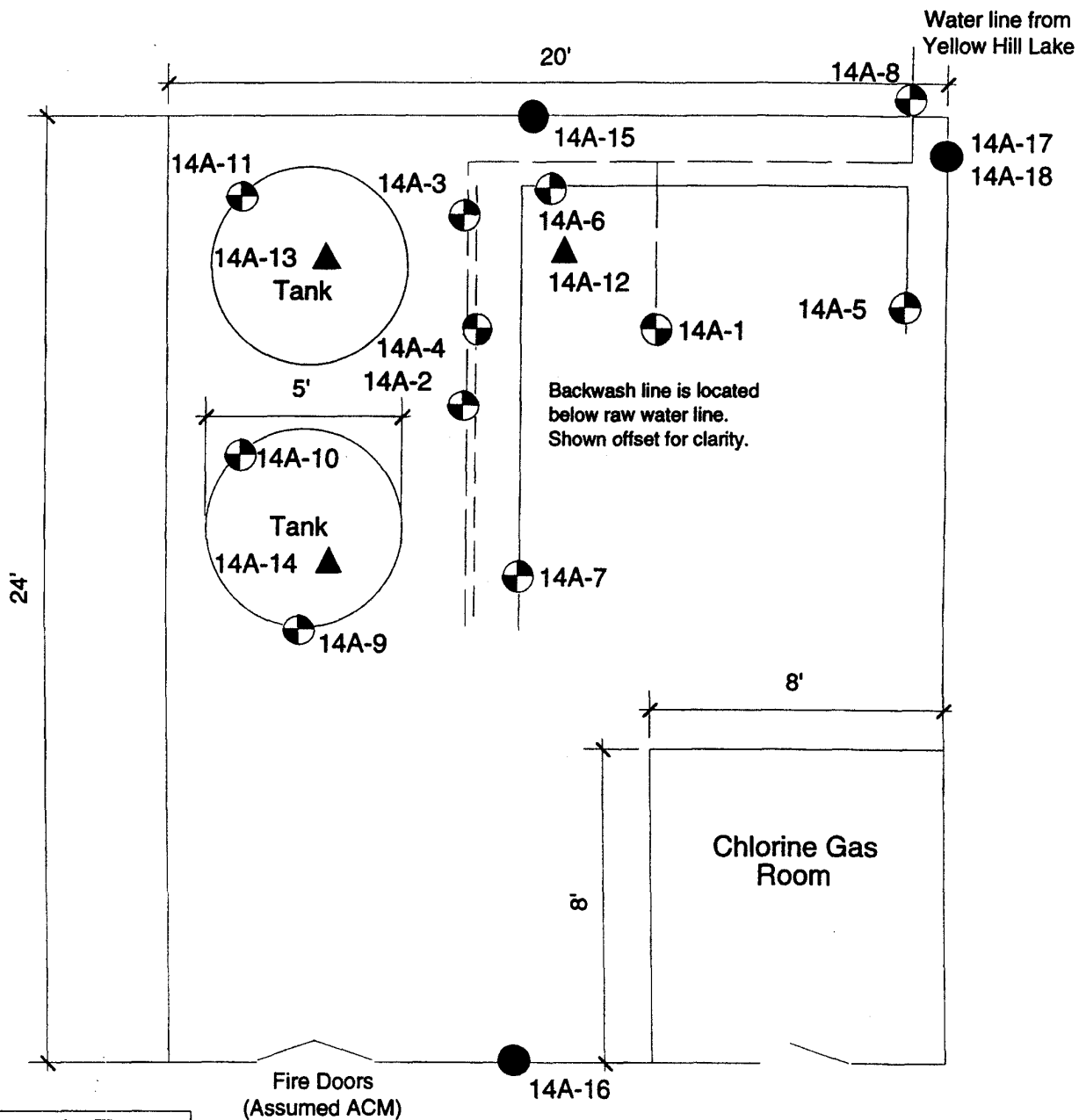
Recommendations

Recommended action for the fire door is to repair the door and periodically inspect and maintain.

Remove water line and replace with non-asbestos insulated line. Removal of the pipeline and ACM insulation is Class I work. All Class I work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D).



Photograph 14: Chlorination Building

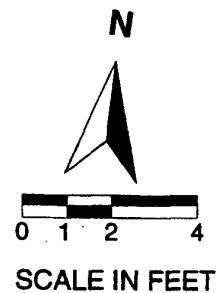


Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ⊗ -TSI
- ⬢ -Misc

- — — Raw Water
- - - Backwash
- — — Filtered Water

Site 14 Chlorination Building
Floor Plan

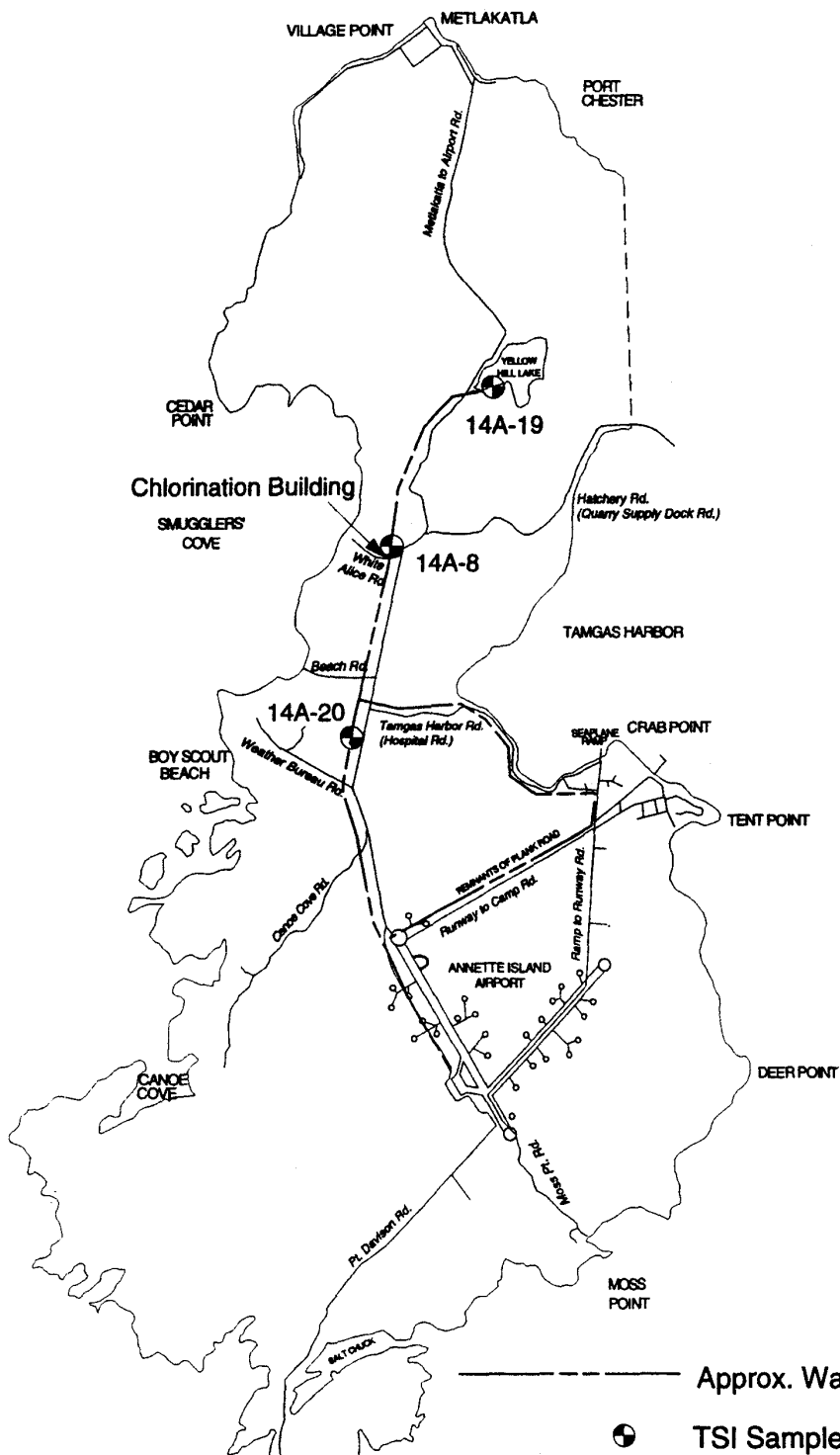


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Figure 14-1

Asbestos Sample Locations



**Site 14
Chlorination Building
& Water Line**

Approx. Water Line Location

● TSI Sample

N



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Figure 14-2

Asbestos Sample Locations

4.3 Site 15 White Alice Station

Description

The former White Alice Station consisted of a 42-foot x 361-foot, two-story building (see photograph 15), a microwave tower, and two large metal tropospheric relay antennas. It was constructed by the U.S. Air Force in the late 1950s. The building is currently used by Metlakatla Power and Light (MPL). The building is divided into two sections by a concrete firewall. The north section is used as offices. The south (42-foot x 100-foot) section is used as living quarters. The first floor of the south section has been converted to living quarters for the MPL manager. The second floor contains former Air Force living quarters and receives limited use.

Suspect Materials

Nineteen samples of sixteen suspect ACMs were collected. Suspect materials included exterior concrete surfacing, inner wall gypsum board, wall and ceiling insulation, floor tiles and associated mastic, cove base and associated mastic, pipe and pipe fitting insulation, hot water tank and boiler insulation, lower and upper ceiling tiles, window caulking, hardboard wall-board, walk-in cooler insulation, and light fixture reflective strip. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figures 15-1 through 15-3 for sample locations.

Asbestos-Containing Materials

- Gray/brown floor tiles and mastic contain chrysotile asbestos
- Pipe fitting insulation contains chrysotile asbestos
- Hot water tank and boiler insulation contains chrysotile and *amosite* asbestos
- Fire hose is assumed ACM
- Window caulking contains chrysotile asbestos
- Walk-in cooler insulation contains chrysotile asbestos
- Light fixture reflective strip contains chrysotile asbestos
- Fire doors are assumed to be ACM

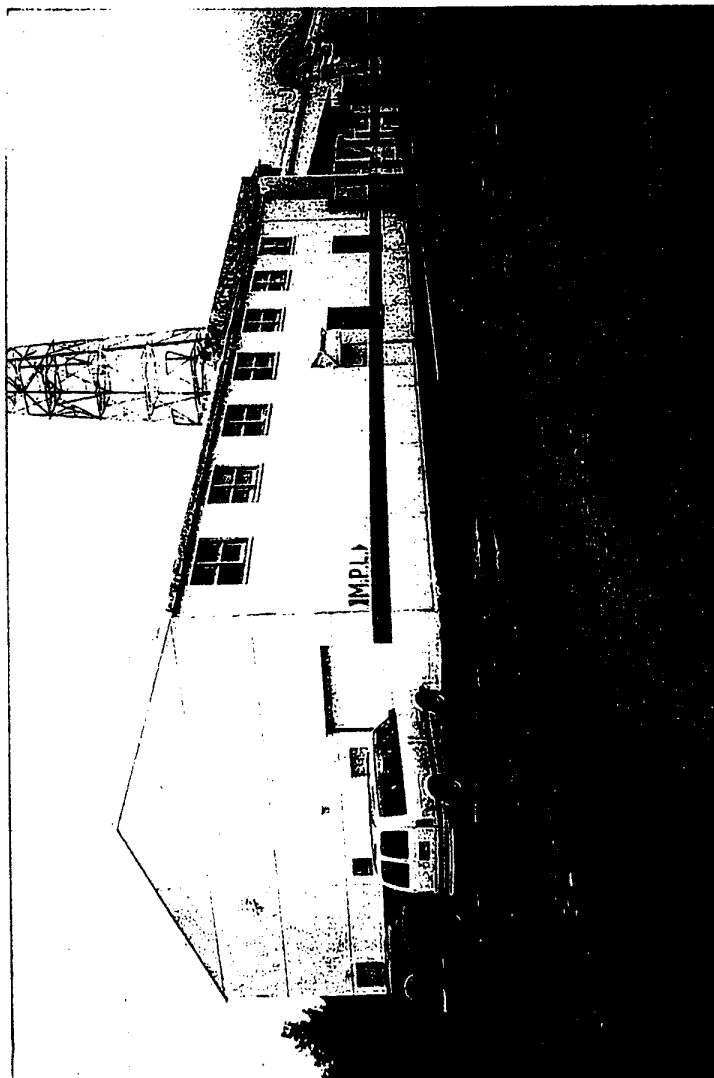
Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
15A-11	Warehouse	Gray/brown floor tiles and mastic	2,394	SF
NA	Lobby	Gray/brown floor tiles and mastic	1,680	SF
NA	Qtrs	Gray/brown floor tiles and mastic	7,744	SF
15A-2	Facility	Pipe fitting insulation	440ELs/105Ts	EA
15A-6	Machine shop	Hot water tank insulation	48	SF
NA	Machine shop	Boiler insulation	100	SF
NA	Hallway	Fire hose	Reel	-
15A-15	Qtrs	Window caulking	462	LF
15A-14	Kitchen	Walk-in cooler insulation	209	SF
15A-16	Qtrs	Light fixture reflective strip	4	SF
NA	Whole Bldg.	Fire doors (7'x3'x2")	15	EA

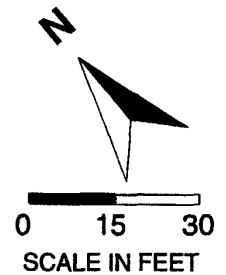
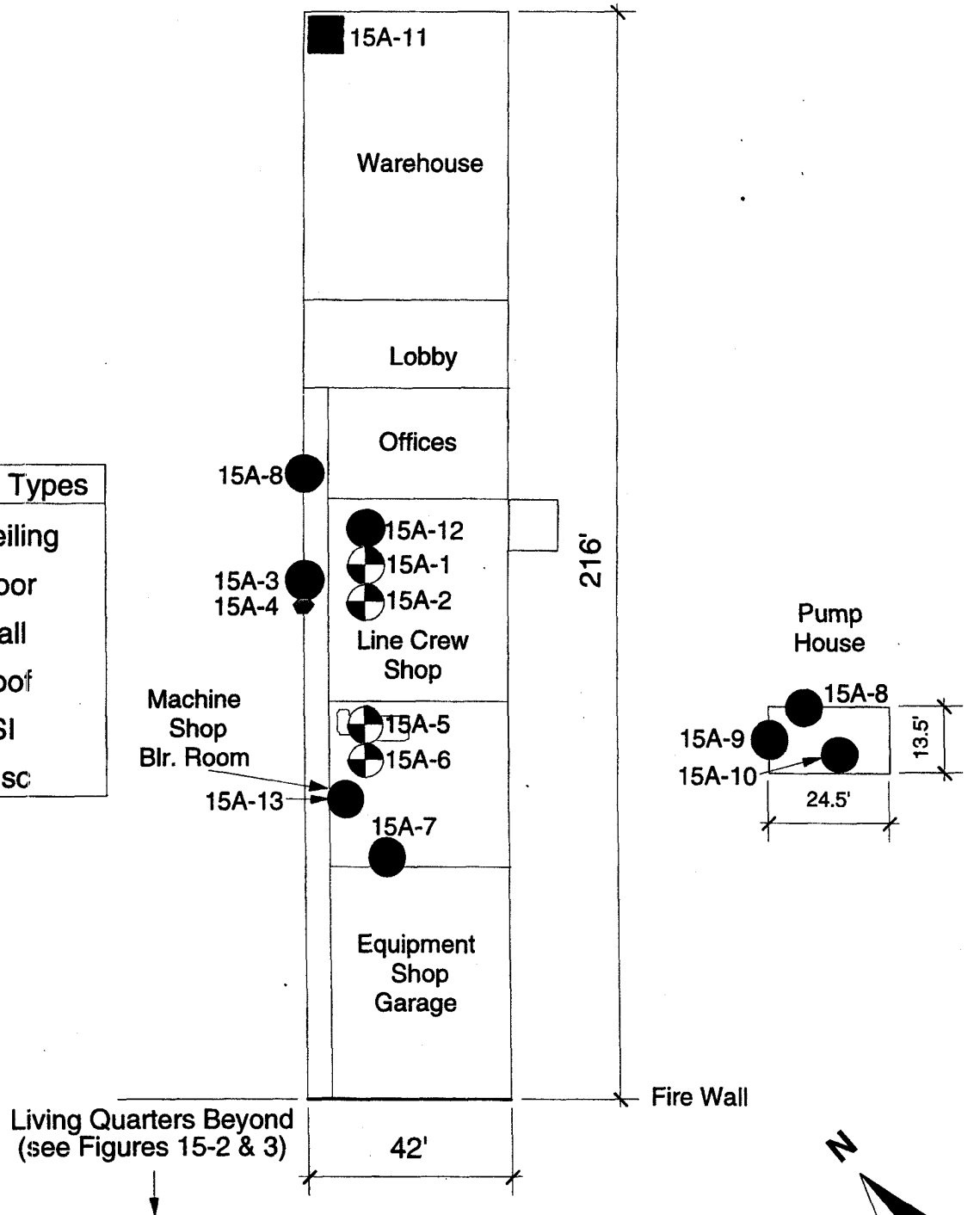
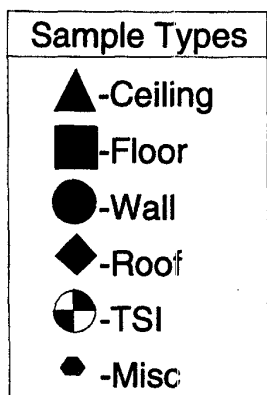
EA - Each EL - Elbow
 LF - Linear foot SF - Square foot
 T - Tee

Recommendations

Class I, II, and III work will all be performed at this site (see Figures 15-4 through 15-6 for abatement plans). Class I work involves removal of boiler and hot water tank insulation in the machine shop. Insulation will be replaced with comparable non-asbestos insulation. Removal of the floor tiles and mastic from the warehouse and lobby and removal of window caulking and the light reflective strip from the quarters area are Class II work. These materials will be replaced with non-asbestos materials. It is recommended that pipe fittings be encapsulated throughout the facility. The *encapsulation* of pipe fittings and repair to the kitchen walk-in cooler insulation are Class III work. All classes of work must be performed according to OSHA Standard 1926.1101 Subpart Z (see Appendix D).



Photograph 15: White Alice Station



Site 15 White Alice Station
MPL Offices

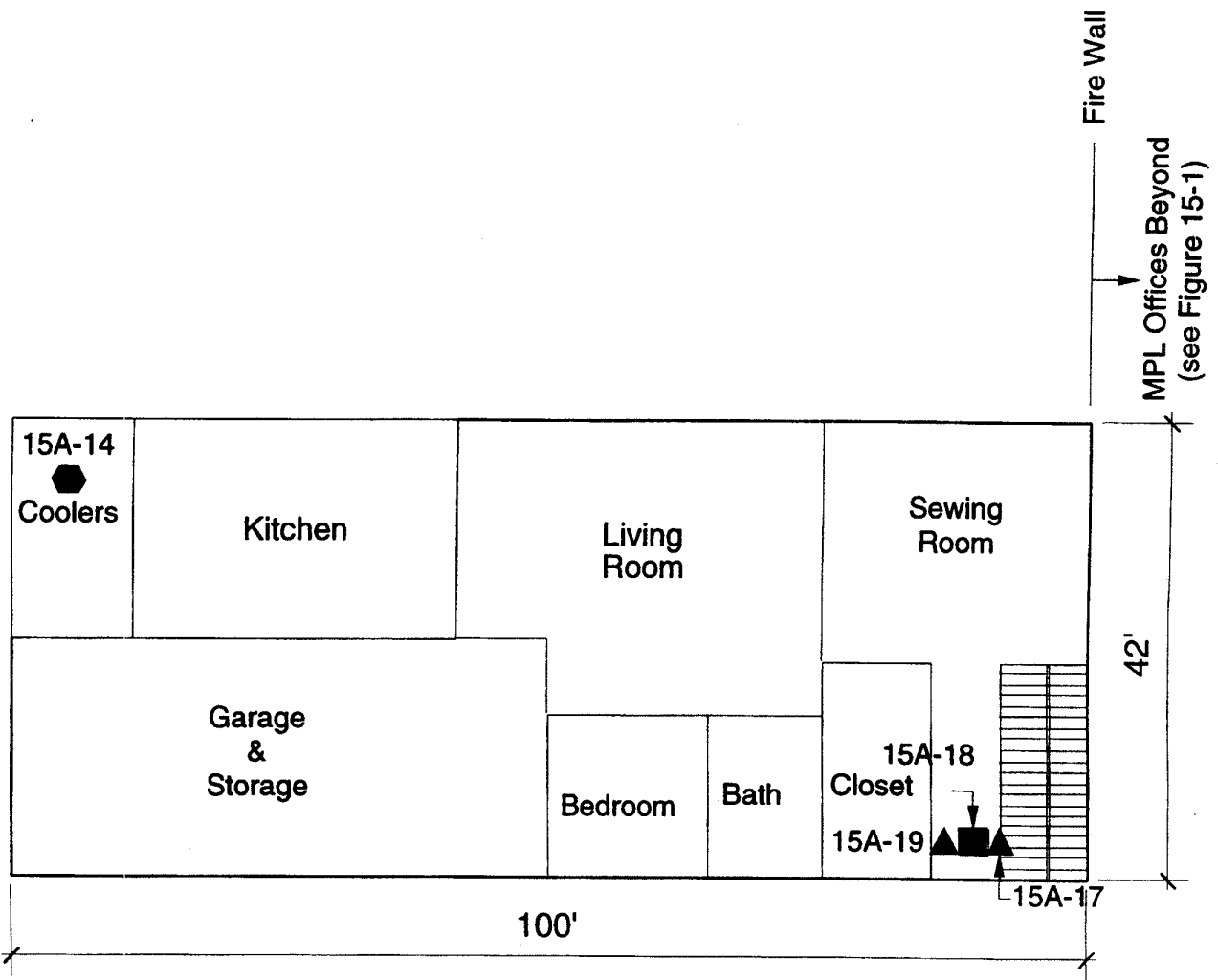


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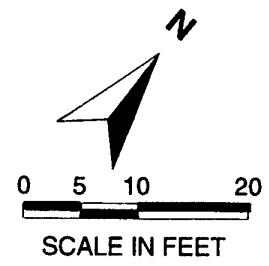
METLAKATLA PENINSULA
ASBESTOS INVENTORY
& ABATEMENT PLAN

Figure 15-1

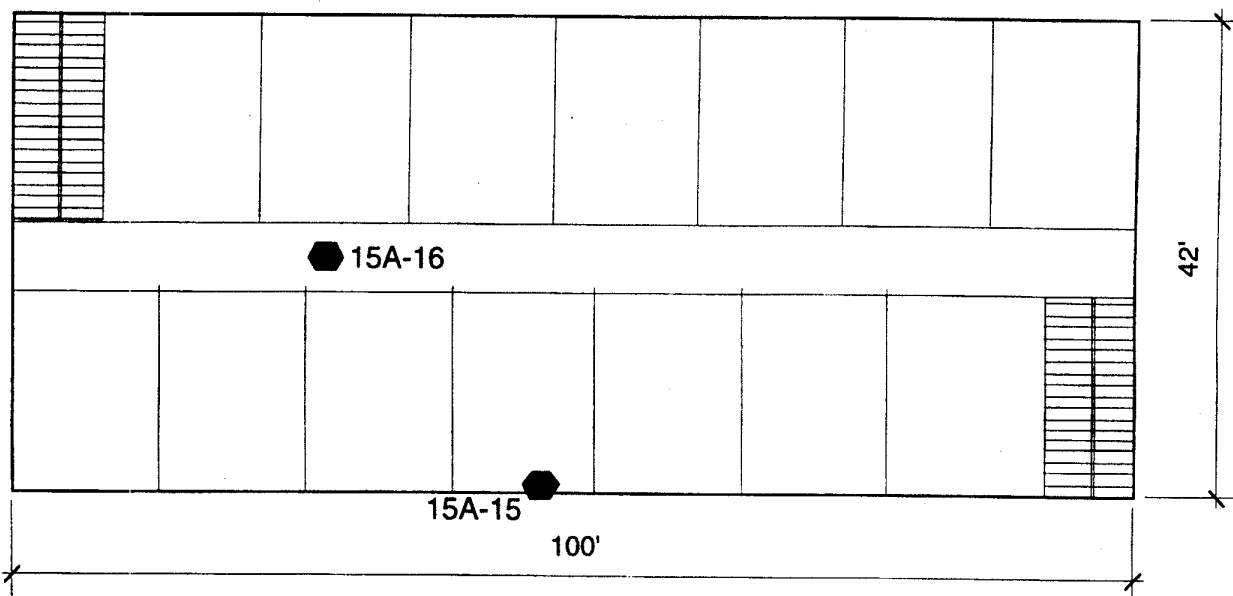
Asbestos Sample Locations



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊕	-TSI
⬢	-Misc

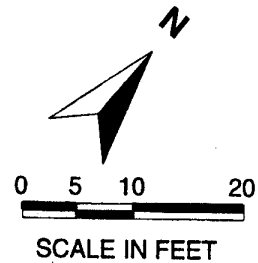


Site 15 White Alice Station
Living Quarters
First Floor Plan



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊙	-TSI
⬡	-Misc

Site 15 White Alice Station
Living Quarters
Second Floor Plan

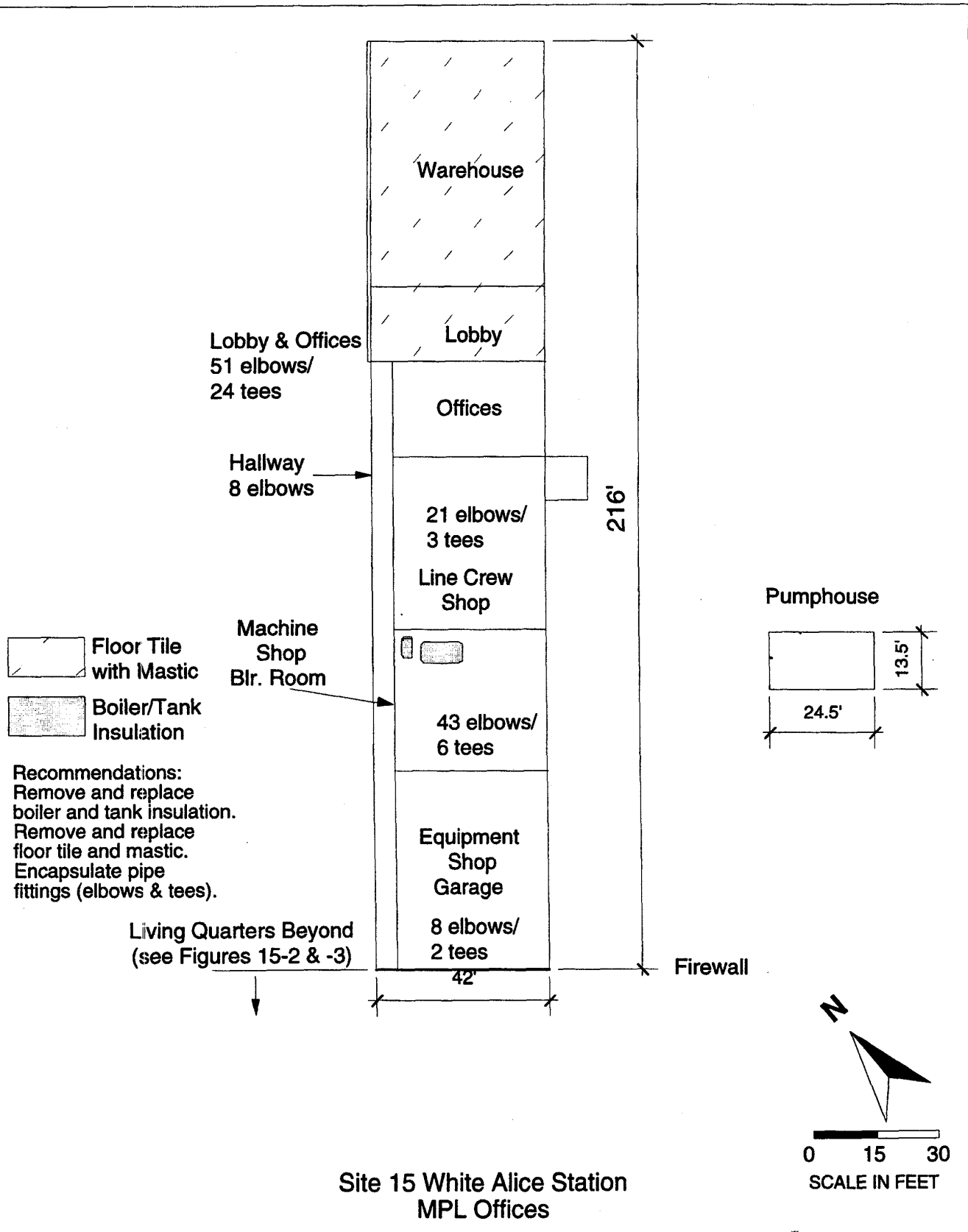


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& ABATEMENT PLAN**

Figure 15-3

Asbestos Sample Locations



Site 15 White Alice Station
MPL Offices



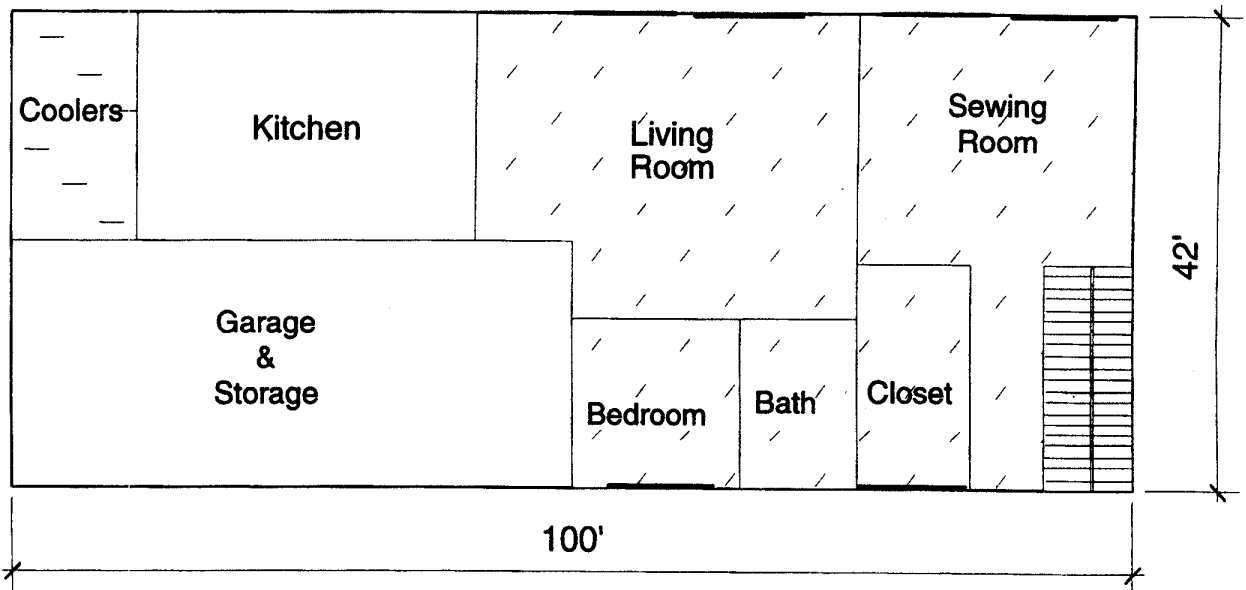
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ASBESTOS INVENTORY
& ABATEMENT PLAN

Figure 15-4

Asbestos Abatement Plan

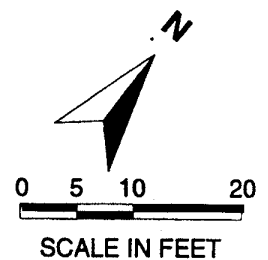
There are 282 elbows and 70 tees associated with the first and second floors of the living quarters.



Recommendations:
 Remove and replace window caulking.
 Inspect and repair cooler insulation.
 Inspect and repair floor tile and mastic.
 Encapsulate pipe fittings (elbows and tees)
 on first and second floors.

— — — Cooler Insulation
 — Window Caulking

Site 15 White Alice Station
 Living Quarters
 First Floor Plan

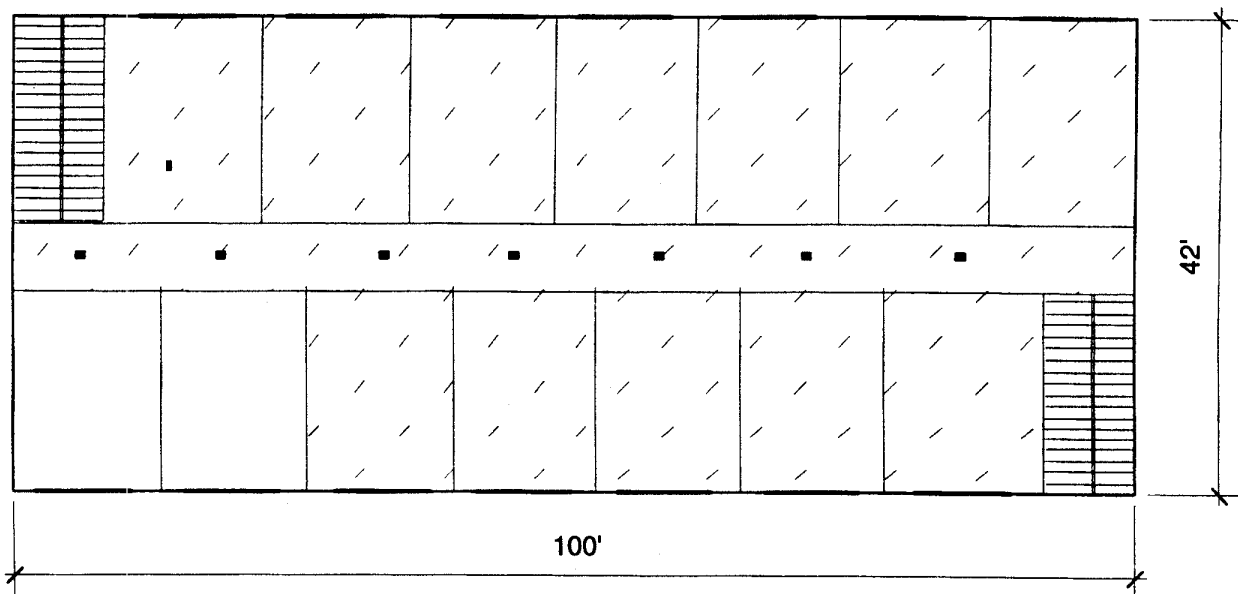


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 & ABATEMENT PLAN**

Figure 15-5

Asbestos Abatement Plan

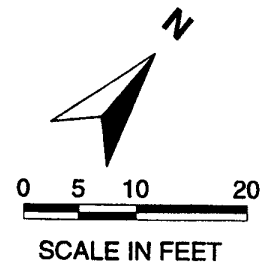


Recommendations:
 Remove and replace window caulking.
 Remove and replace reflective strip in lights.
 Inspect and repair floor tiles and mastic.

- Window Caulking
- Reflective Strip
- ▨ Floor Tile with Mastic

Pipe fittings are considered on Figure 15-5.

Site 15 White Alice Station
 Living Quarters
 Second Floor Plan



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 & ABATEMENT PLAN**

Figure 15-6

Asbestos Abatement Plan

4.4 Site 20 Weather Bureau Housing

Description

The weather bureau housing complex consists of seven two-story wood-frame structures, six residences, and one maintenance building (see photograph 20) constructed in the late 1940s (Ridolfi, 1996). The buildings have metal roofs and fiberglass insulation. All but two of the houses are occupied full time. One building (B-3) has been condemned for structural reasons; another (B-6) is used as transient employee housing. An interview with weather bureau personnel established that the buildings are all of similar construction and materials. To limit damage to occupied units, samples of suspect ACM were taken from only the condemned unit.

Suspect Materials

Five samples of five suspect ACMs were collected. Suspect materials included floor tiles, cove base and associated mastic, ceiling tiles, and chimney surfacing material. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 20-1 for sample locations.

Asbestos-Containing Materials

- Mastic material used for the downstairs floor tile contains chrysotile asbestos
- Mastic material used for the upstairs floor tile contains chrysotile asbestos
- Mastic material used for the upstairs cove base contains *tremolite* asbestos

Summary of ACM Quantities

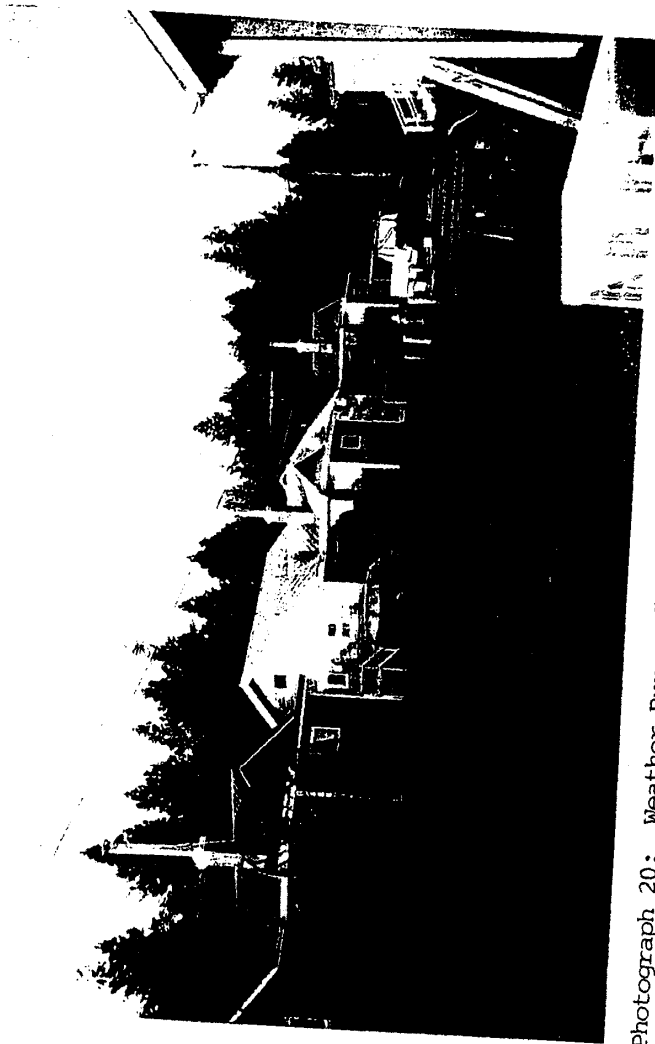
Sample No.	Location	Material Description	Quantity*	Units
20A-1	Entry	Floor tile, black mastic backing	840	SF
20A-4	2nd floor	Floor tile, black mastic backing	1,600	SF
20A-5	2nd floor	Cove base, brown mastic backing	580	LF

* per each unit

Recommendations

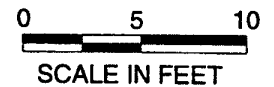
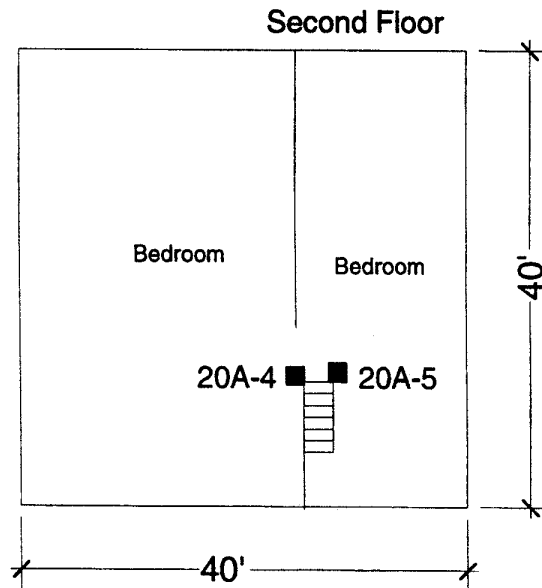
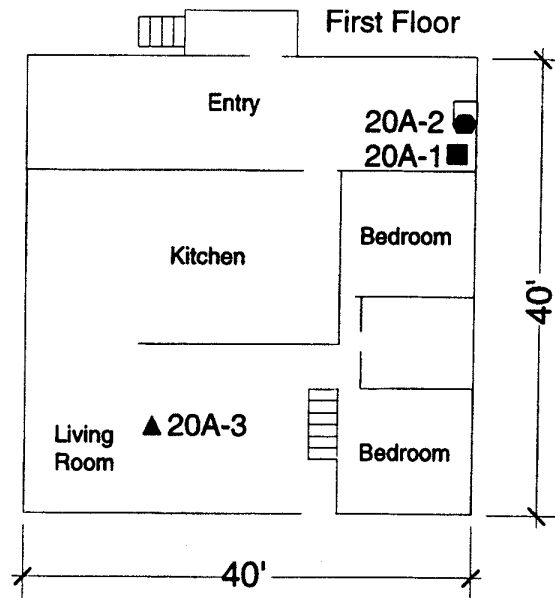
All materials were in good condition at the time of the inspection. Recommendations for all three materials in the occupied buildings are the same (see Figure 20-2 for asbestos management plan). The floor tiles and cove base should be inspected in all buildings. All loose or damaged areas should be repaired. Periodic inspections of all houses should be performed to ensure the integrity of the materials. Repair of the floor tile and cove mastic is Class III work. All Class III work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class III work (see Appendix D).

For the condemned building, it is recommended that all ACM be removed before demolition. Removal of the mastic associated with the floor tile and cove is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).



Photograph 20: Weather Bureau Housing

Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊕	-TSI
●	-Misc



Site 20 - Weather Bureau Housing
Floor Plan



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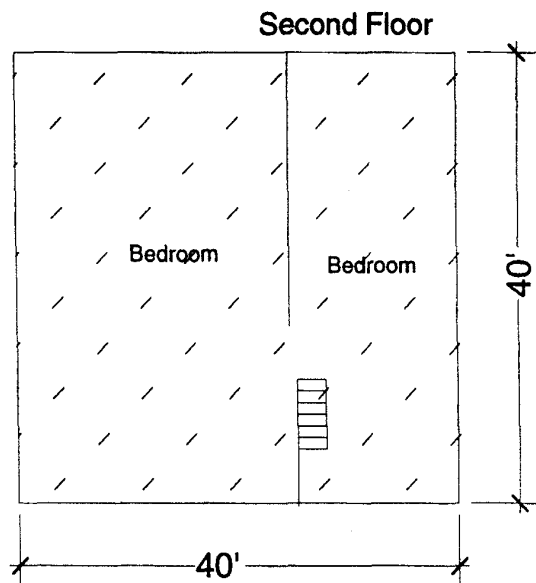
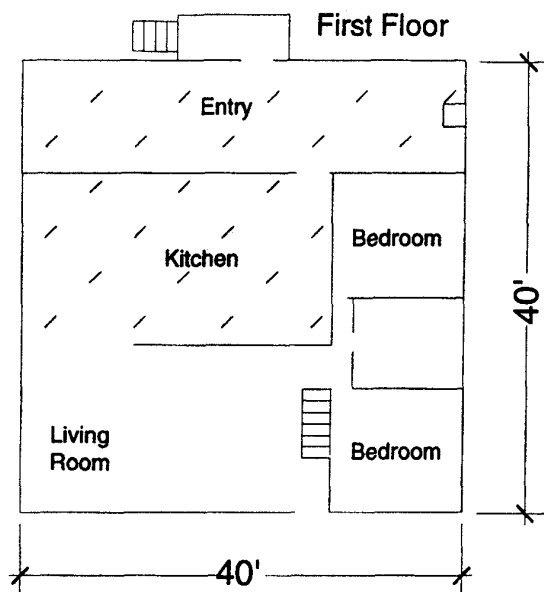
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ASBESTOS INVENTORY
& ABATEMENT PLAN**

Figure 20-1

Asbestos Sample Locations

All interior walls on both floors
have cove base with ACM mastic.

 Floor Tile With
ACM Mastic Only



Recommendations:

Inspection of all buildings for loose or damaged ACM.
Repair of all loose or damaged cove base and floor tiles.
Periodic inspection and maintenance of all ACM.
Posting in units location of in-place ACM.



0 5 10
SCALE IN FEET

Site 20 - Weather Bureau Housing
Floor Plan



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& ABATEMENT PLAN**

Figure 20-2

Asbestos Management Plan

4.5 Site 21 FAA Remote Control Air Ground

Description

The remote control air ground facility has recently been decommissioned (see photograph 21), and the FAA's lease has been terminated. However, the U.S. Coast Guard (USCG) has recently leased acreage at the former FAA facility and established a Global Positioning System (GPS) ground station using the FAA's existing building and three new towers. This building was not accessible to inventory personnel.

Summary of Prior Work

No information on possible ACM could be found for this site.



Photograph 21: Remote Control Air Ground

4.6 Site 22 DOD AACS Station

Description

The remains of the DOD AACS station consist of a 20-foot x 60-foot wood floor on pilings, a 30-foot faded red-and-white tower (see photograph 22), concrete foundations, concrete pits, and felled wood pole antennas. Abandoned electrical equipment is in the crawl space below the wood floor foundation, and remnants of vinyl tiles are on the wood floor and scattered about.

Suspect Materials

Four samples of four suspect ACMs were collected. Suspect materials included fiberboard insulation, tar paper from the roof, fiberboard floor insulation, and floor tiles. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 22-1 for sample locations.

Asbestos-Containing Materials

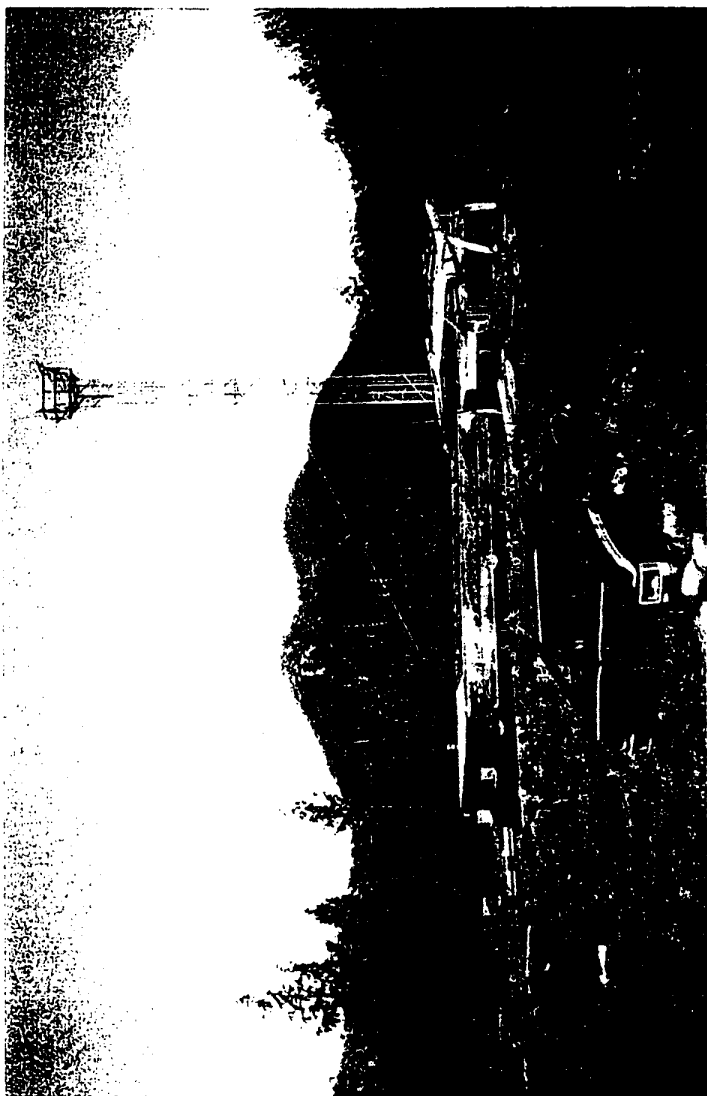
- Green/black floor tiles from the main building floor contain chrysotile asbestos

Summary of ACM Quantities

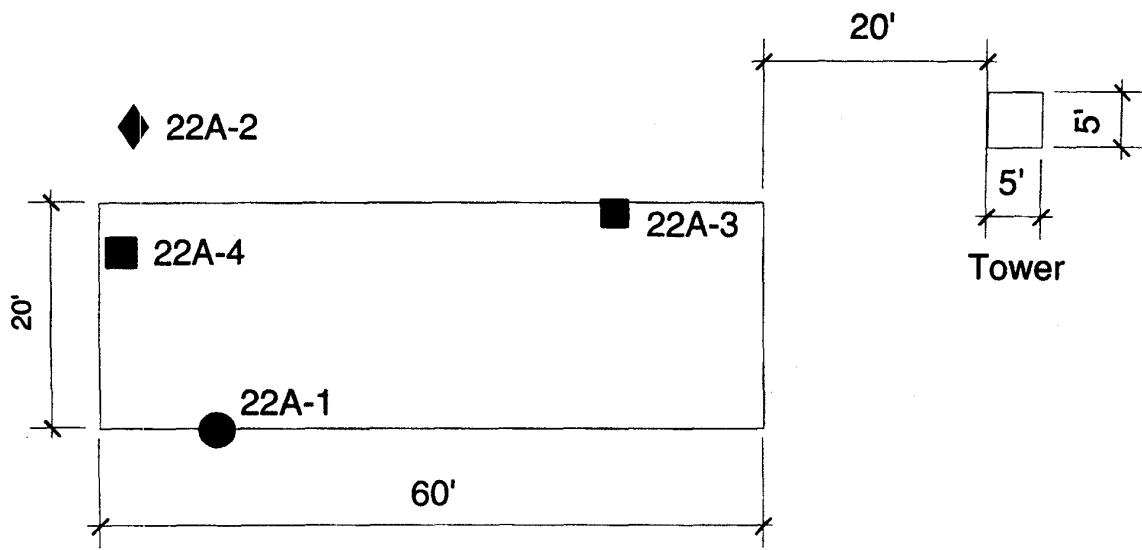
Sample No.	Location	Material Description	Quantity	Unit
22A-3	Floor	Green/black floor tiles	1,200	SF

Recommendations

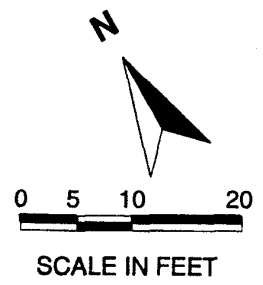
Recommended action is removal of the ACM (see Figure 22-2 for asbestos abatement plan). The floor tile material is significantly damaged and loose. Removal of intact material is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). An unknown quantity of floor tiles is scattered around the site. Removal of this debris should be done according to recommended procedures as described in Section 5.1. Caution and safe work practices are essential because of the deteriorated nature of the building.



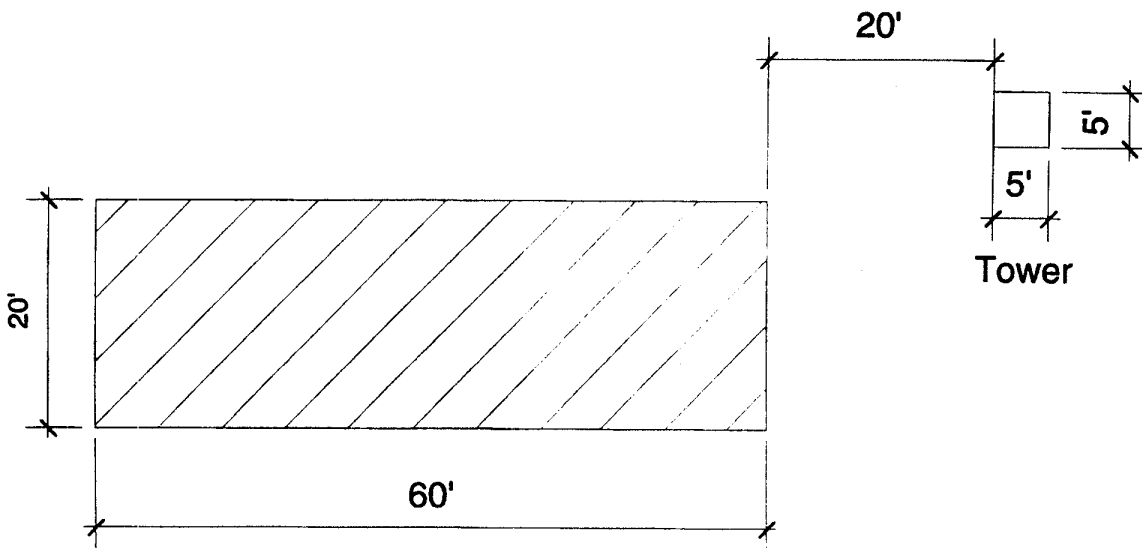
Photograph 22: AACS Station



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊗	-TSI
⬠	-Misc

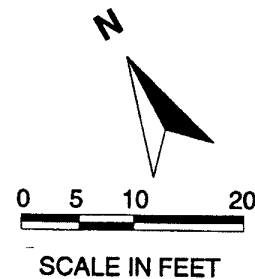


Site 22 DOD AACS Station



 Floor Tiles

Recommendations:
 Remove floor tiles from structure floor and
 remove debris piles from around the structure.



Site 22 DOD AACS Station



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Figure 22-2

Asbestos Abatement Plan

4.7 Site 24 FAA Middle Marker FacilityDescription

The remains of the middle marker facility consist of an 8-foot x 12-foot white wood-frame building (see photograph 24). The building is severely deteriorated and termite infested. It contains abandoned electronic equipment and vinyl tile flooring.

Suspect Materials

Three samples of three suspect ACMs were collected. Suspect materials included fibrous insulation batting, tar paper, and floor tiles with mastic backing. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 24-1 for sample locations.

Asbestos-Containing Materials

- Brown floor tiles contain chrysotile asbestos

Summary of ACM Quantities

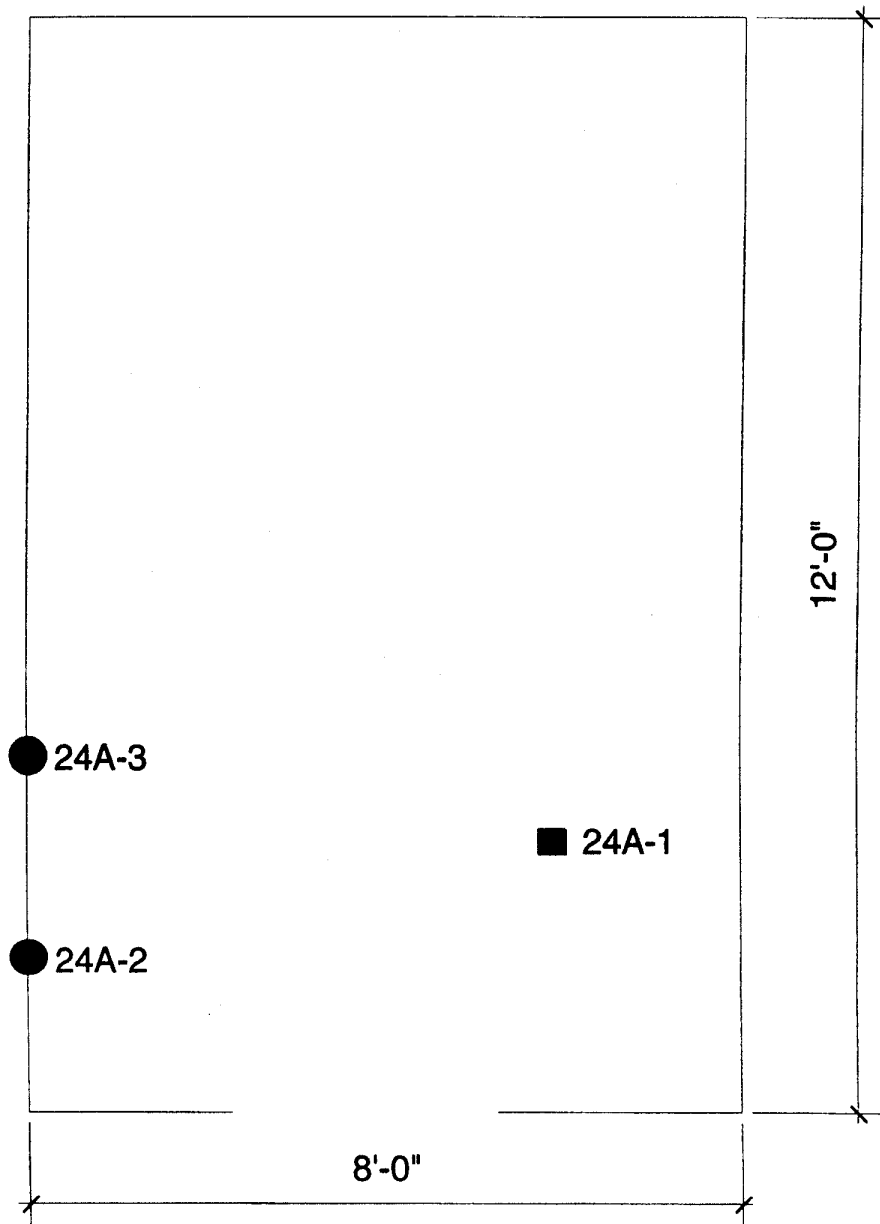
Sample No.	Location	Material Description	Quantity	Unit
24A-1	Floor	Brown floor tiles	96	SF

Recommendations

Recommended action is removal of the ACM floor tiles (see Figure 24-2 for asbestos abatement plan). The floor tile material is significantly damaged and loose. Removal is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). Caution and safe work practices are essential because of the deteriorated nature of the building.

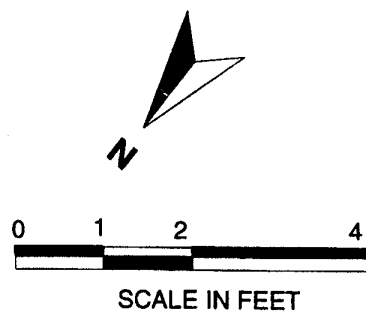


Photograph 24 : Middle Marker Facility



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊕	-TSI
⬡	-Misc

Site 24 Middle
Marker Facility
Floor Plan

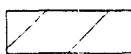
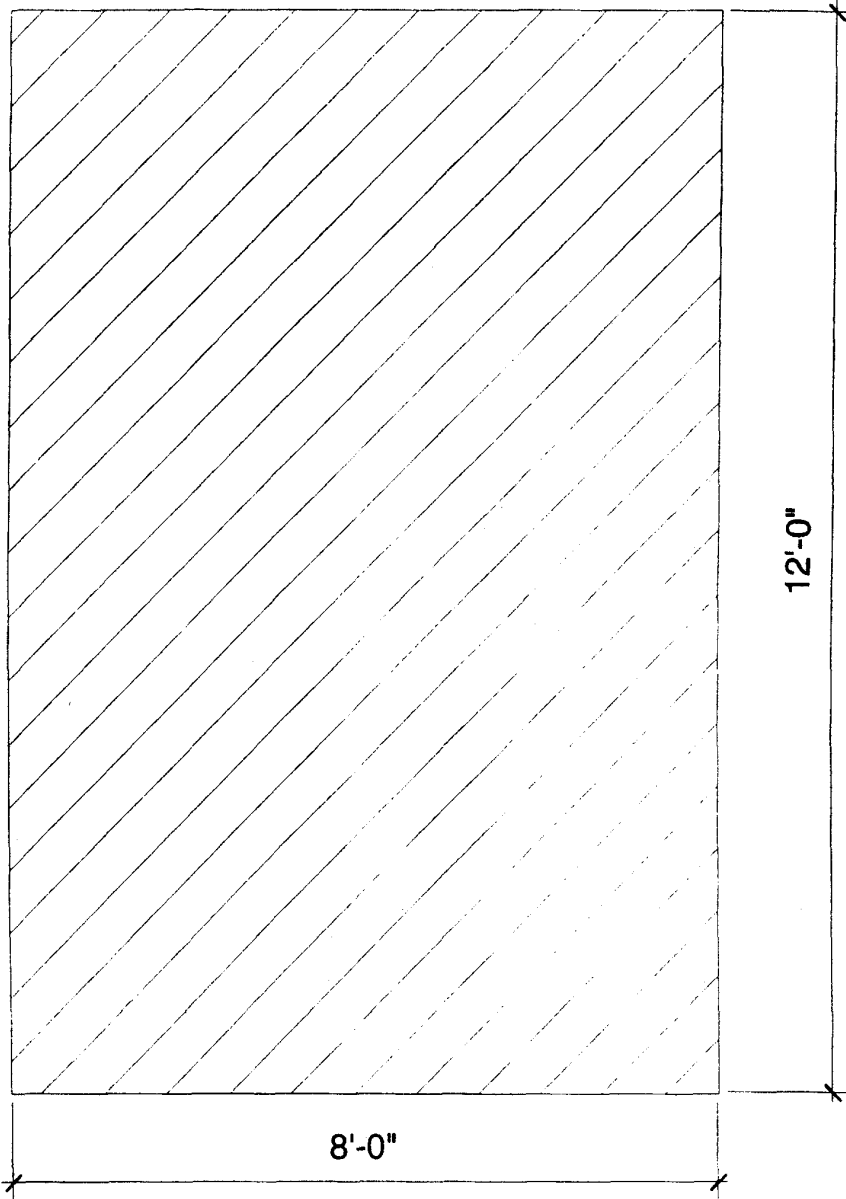


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& ABATEMENT PLAN**

Figure 24-1

Asbestos Sample Locations

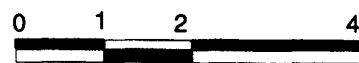


ACM Floor Tiles

Recommendations:
Remove floor tiles.



Site 24 Middle
Marker Facility
Floor Plan



SCALE IN FEET



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& ABATEMENT PLAN**

Figure 24-2

Asbestos Abatement Plan

4.8 Site 27 Very High Frequency Omnidirectional Range Tactical Air Navigation (VORTAC)**Description**

The VORTAC facility consists of a 30-foot x 30-foot concrete block building, an overhead circular metal grid, a nearby elevated storage platform, and metal hazardous material storage boxes (see photograph 27). This building was not accessible to inventory personnel.

Summary of Prior Work

The FAA conducted an asbestos inventory of this facility in August 1994. Results showed that there is ACM in the facility and that the materials were in good condition. These materials include:

- Drywall joint compound associated with the original drywall in the perimeter and ceiling
- Brown floor tile in the equipment room (10 SF); mastic is non-ACM
- Mastic associated with tan floor tiles in the break, storage, and equipment rooms (954 SF); floor tiles are non-ACM
- Gaskets on the engine generators (not sampled) were assumed to be ACM
- Roof (inaccessible to sampling) was assumed to be ACM (2,056 SF)

Recommendations

It was recommended that ACM identified in the FAA report not be disturbed or removed (Research Management Consultants Inc., 1994).



Photograph 27: VORTAC Facility

4.9 Site 36 FAA Glide Slope Facility

Description

The remains of the FAA glide slope facility consist of an 8-foot x 8-foot faded red-and-white wood-frame building and a 10-foot faded red-and-white tower (see photograph 36), both constructed in 1952. The building is severely deteriorated and termite infested. It contains abandoned electronic equipment and vinyl tile flooring.

Suspect Materials

Two samples of two suspect ACMs were taken. Suspect materials included floor tiles and a tar paper layer inside the walls. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 36-1 for sample locations.

Asbestos-Containing Materials

- Floor tiles contain chrysotile asbestos

Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
36A-1	Facility	Green & white floor tile	64	SF

Recommendations

Recommended action is removal of the ACM (see Figure 36-2 for asbestos abatement plan). The floor tile material is significantly damaged and loose. This removal is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). Caution and safe work practices are essential because of the deteriorated nature of the building.



Photograph 36: Glide Slope Facility

Sample Types

▲ -Ceiling

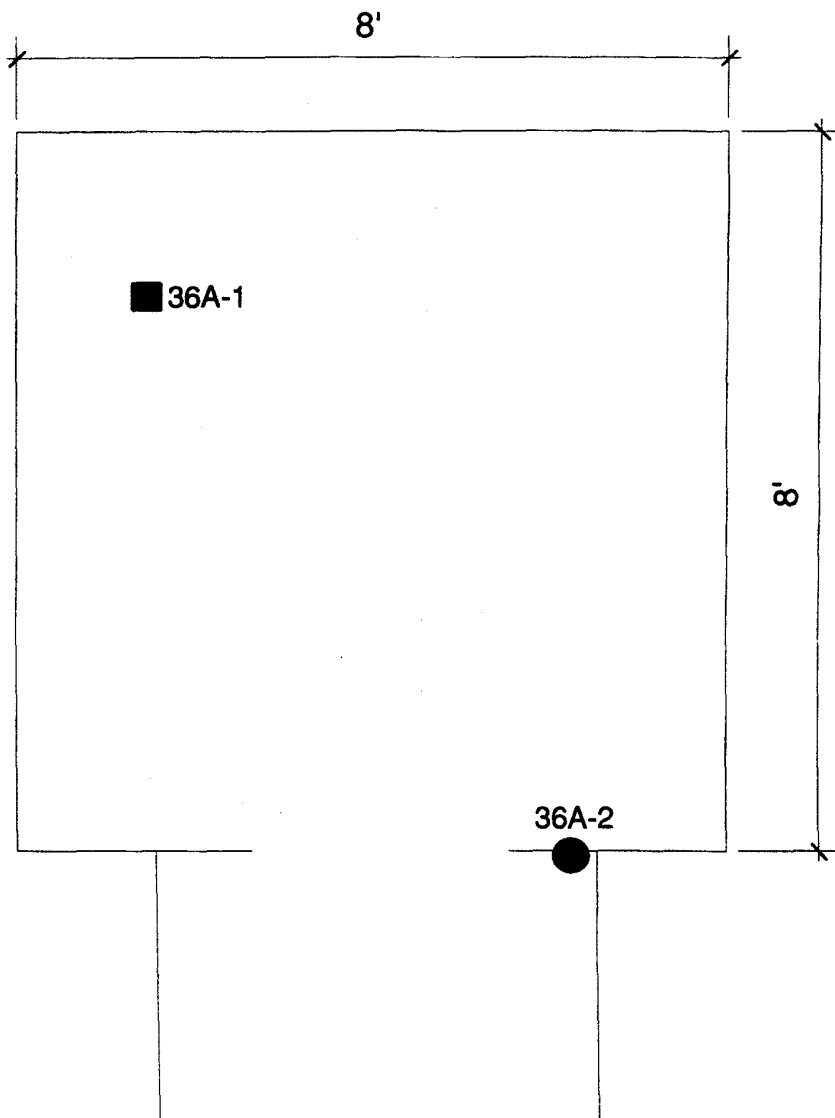
■ -Floor

● -Wall

◆ -Roof

⊕ -TSI

⬡ -Misc



**Site 36 - Glide Slope Facility
Floor Plan**

SCALE IN FEET



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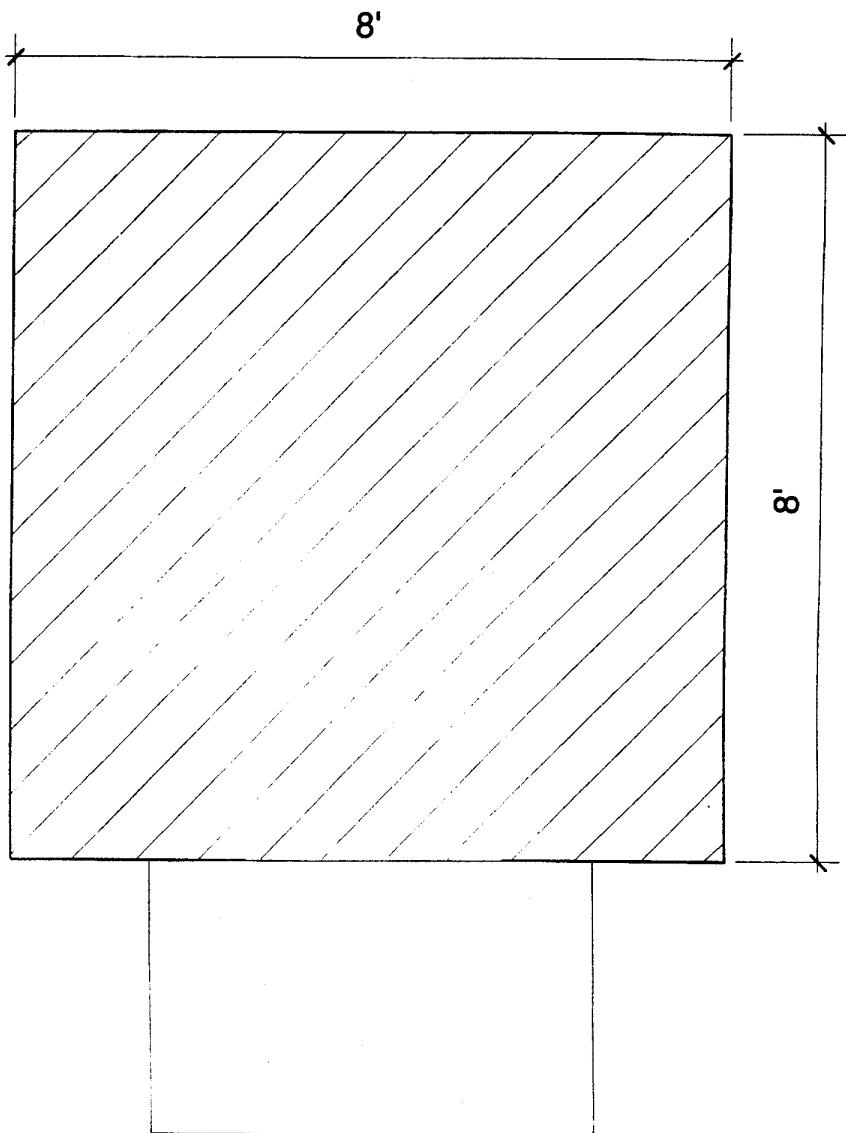
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& ABATEMENT PLAN**

Figure 36-1

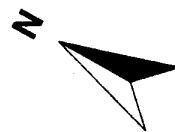
Asbestos Sample Locations



ACM Floor Tile



Recomendations:
Removal of all floor tiles.



SCALE IN FEET

Site 36 - Glide Slope Facility
Floor Plan



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ASBESTOS INVENTORY
& ABATEMENT PLAN**

Figure 36-2

Asbestos Abatement Plan

4.10 Site 44 USCG Housing**Description**

Remains of the USCG housing consist of 12 40-foot x 100-foot and two 40-foot x 150-foot concrete foundations (see photograph 44). All 14 of the residential buildings were moved off the island when Coast Guard operations were moved from Annette Island in 1977 (Ridolfi, 1996). Segments of a cementitious water line were observed between some of the buildings.

Suspect Materials

Three samples of three suspect ACMs were collected. The materials included cementitious water pipe, transite wallboard, and a layered foam wall insulation material. The wallboard and foam wall material were scattered about the site. The pipe runs between the foundations. Investigation of the surrounding area showed that the foam wallboard probably came from Site 46, the fire station/post exchange building. This material will be addressed in the results for Site 46. It is not known where the transite wallboard originated. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 44-1 for sample locations.

Asbestos-Containing Materials

- Cementitious water pipe contains chrysotile and crocidolite asbestos
- Transite wallboard contains chrysotile asbestos

Summary of ACM Quantities

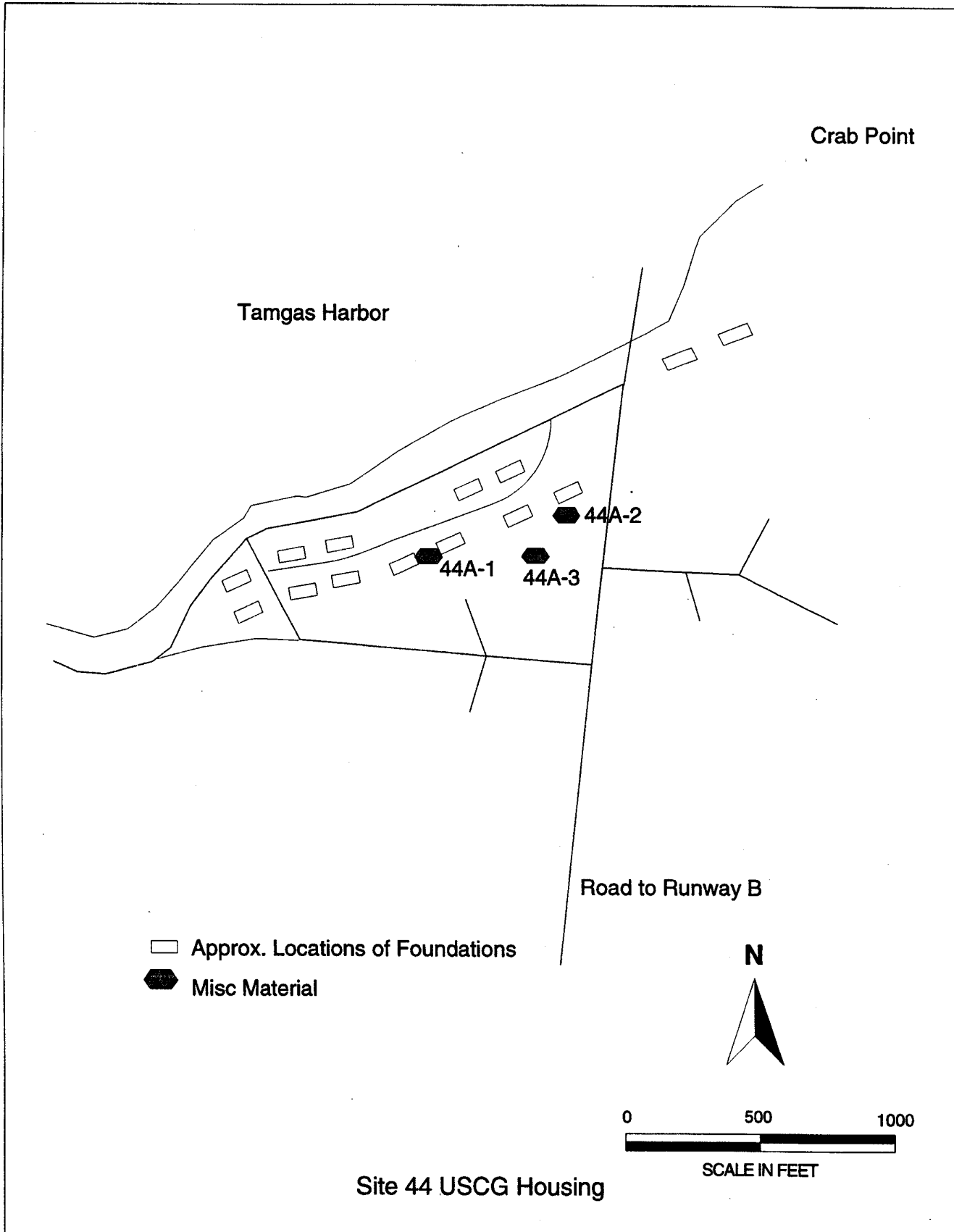
Sample No.	Location	Material Description	Quantity	Unit
44A-1	Housing	Cementitious water pipe	1,500	LF
44A-2	Debris	Transite wallboard	unknown	-

Recommendations

Recommendations for the USCG housing area are to clean up and remove all transite wallboard scattered around the site. The ACM pipe should be removed from between the foundations. Pipe removal is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). Removal of transite debris should be performed according to recommended procedures as described in Section 5.1.



Photograph 44: USOG Housing



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ASBESTOS INVENTORY
& ABATEMENT PLAN**

**Figure 44-1
Asbestos Sample Locations**

4.11 Site 46 USCG Fire Station/Post Exchange**Description**

The remains of the fire station/post exchange consist of a 50-foot x 80-foot, single story, cement block building (see photograph 46). The roof is missing from the building. Building material and roofing debris litter the area immediately north of the building. The building replaced an airplane engine nose hangar and was constructed by the Coast Guard after World War II. The building housed a fire station and the Coast Guard post exchange.

Suspect Materials

Eleven samples were taken of six suspect ACMs. These materials included concrete block and mortar walls, exterior surfacing material, tar paper/foam/wood material, interior surfacing material, and paper/foam/mortar wall material. Markings on the concrete floor show outlines of old floor tile, giving visual evidence of former 9-inch x 9-inch floor tiles in two areas. No material of this type could be found to sample. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 46-1 for sample locations.

Asbestos-Containing Materials

- Paper/foam wallboard with white fibrous, powdery coating that contains chrysotile asbestos

Summary of ACM Quantities

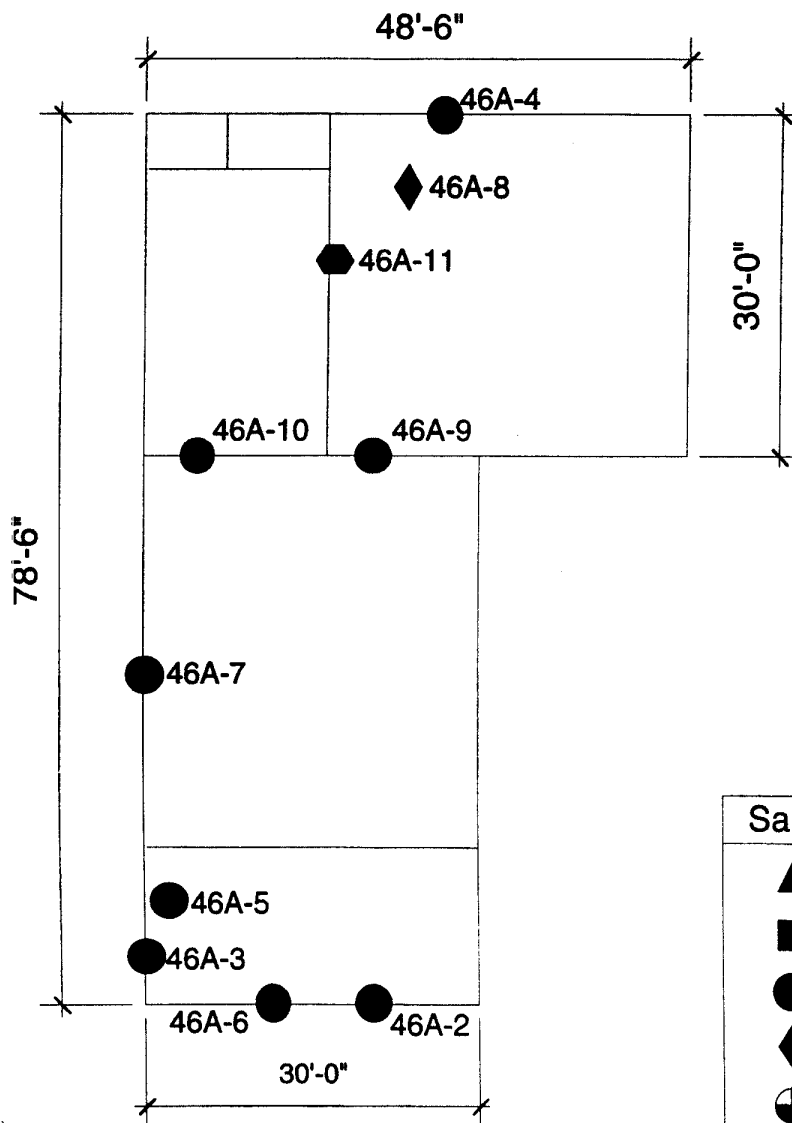
Sample No.	Location	Material Description	Quantity	Unit
46A-9	Offices	White fibrous powdery material on paper/foam	1,570	SF

Recommendations

The wall material is significantly damaged and no longer attached to the concrete walls. This material is in the debris pile on the north side of the building and scattered throughout the area, as indicated by the pieces found at Site 44 (USCG housing). Recommended action is to clean up the wall material (see Figure 46-2 for asbestos management plan). Removal of this material from the debris piles and surrounding areas should be performed in accordance with recommended procedures as described in Section 5.1. During cleanup of the wall material, any floor tile found should be treated as ACM and removed according to recommended procedures described in Section 5.1.



Photograph 46: USCG Fire Station/Post Exchange

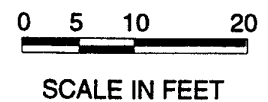


Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ◐ -TSI
- ⬡ -Misc



Site 46 USGS Fire Station/Post Exchange
Floor Plan

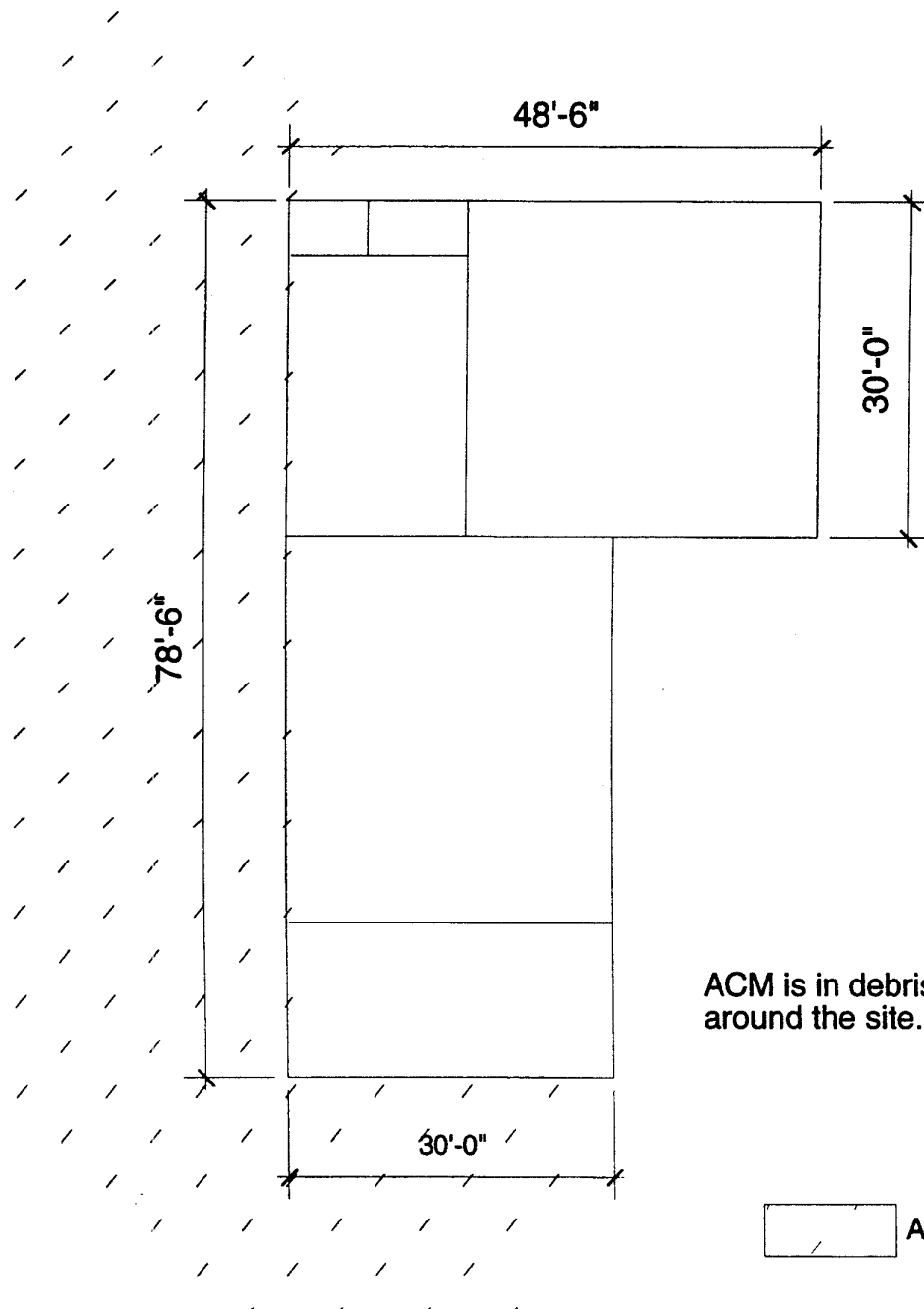


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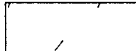
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& ABATEMENT PLAN**

Figure 46-1

Asbestos Sample Locations

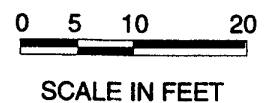


ACM is in debris pile and scattered around the site.

 Approx. location of debris



Site 46 USGS Fire Station/Post Exchange
Floor Plan



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Figure 46-2

Asbestos Abatement Plan

4.12 Site 48 Main Construction Camp

Description

The majority of DOD buildings that comprised the main construction camp and the subsequent camp garrison no longer exist. Remains of the former DOD buildings include concrete and wood foundations, wood debris, metal debris roofing, and wood pilings. Eight of the original DOD buildings (faded red roofs) in the main construction camp were used by the FAA until the mid-1970s.

Suspect Materials

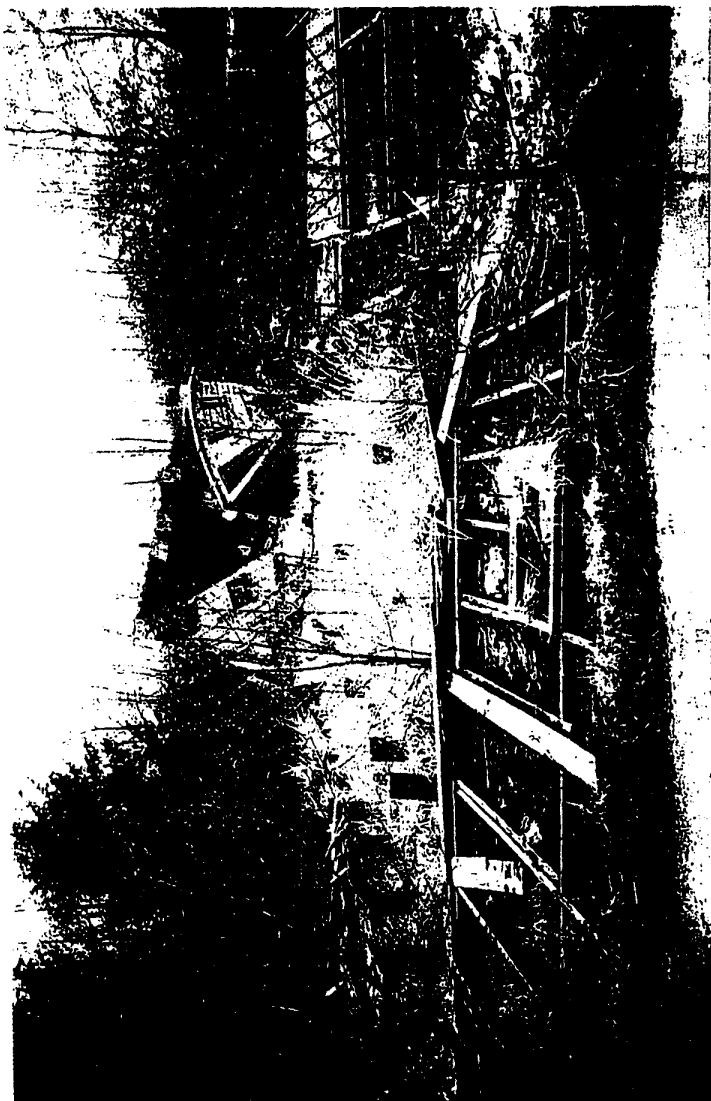
Three suspect materials were found around the site. Samples were taken of all three suspect ACMs. Two composite soil samples were also taken from two random grids established per AHERA guidelines. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 48-1 for the grid layout and sample locations.

Asbestos-Containing Materials

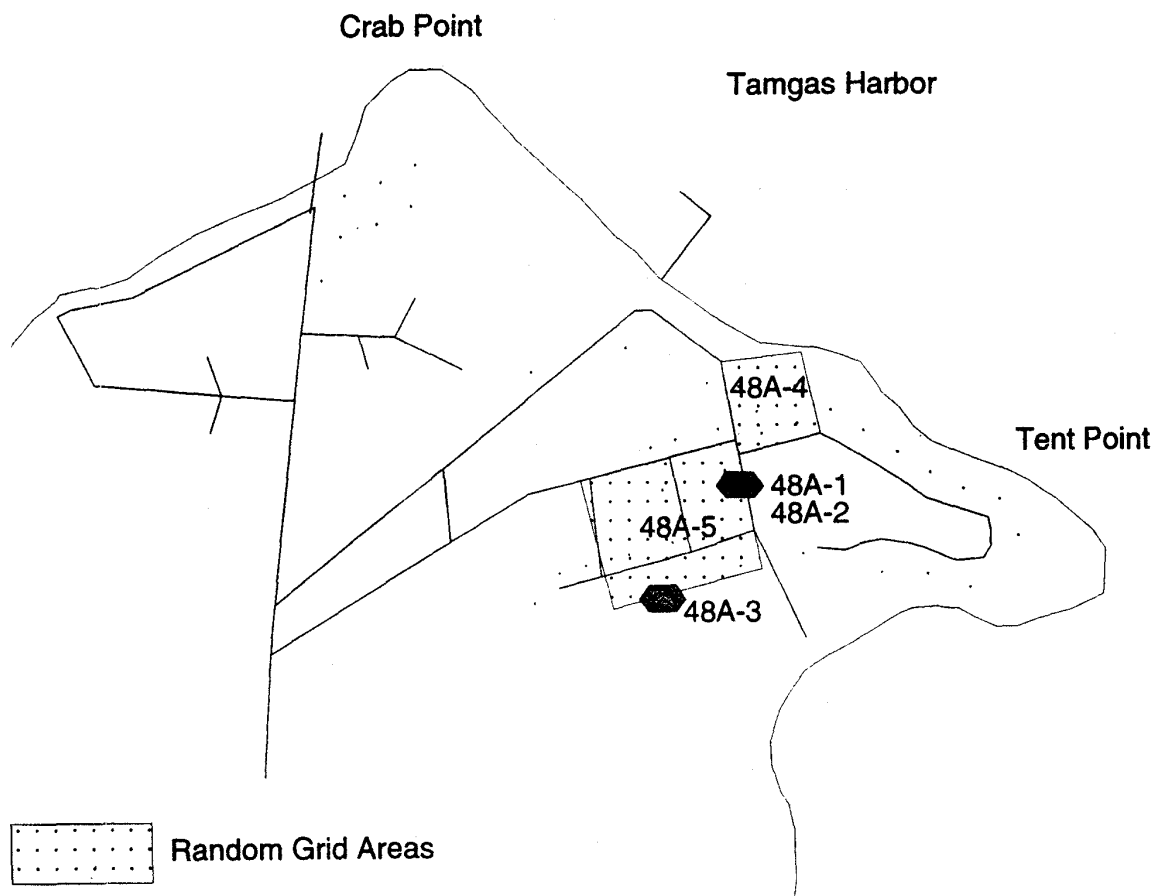
Lab results showed no asbestos present in the materials sampled at the site.

Recommendations

There is no recommended action, because no ACM was found.



Photograph 48: Main Construction Camp



Site 48 Main Construction Camp



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ASBESTOS INVENTORY
& ABATEMENT PLAN**

Figure 48-1

Asbestos Sample Locations

4.13 Site 50 DOD/FAA Fire Truck HutDescription

The remains of the fire truck hut consist of an approximately 17-foot x 64-foot faded red metal building with a concrete foundation (see photograph 50). A fire truck was formerly housed by the FAA in the northern 70 percent of the building. A boiler room occupied the south end of the structure. The boiler, still present, was used to keep the building heated and the fire truck operational at all times of year.

Suspect Materials

Fifteen samples of five suspect ACMs were collected. Suspect materials included insulation on both the hot water tank and the boiler, pipe and fitting insulation, and fire brick inside the boiler. All materials are significantly damaged with the potential for continuing damage. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 50-1 for sample locations.

Asbestos-Containing Materials

- Boiler insulation material contains amosite and chrysotile asbestos
- Pipe insulation contains chrysotile asbestos with amosite in one sample
- Pipe fitting insulation contains chrysotile asbestos

Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
50A-4, -5, -6	Boiler Room	Boiler insulation with fabric cover	193	SF
50A-7, -8, -9	Boiler Room	Pipe insulation with fabric cover	20	LF
50A-13, -14, -15	Boiler Room	Pipe fitting insulation with fabric cover	5ELs/ 4Ts	EA

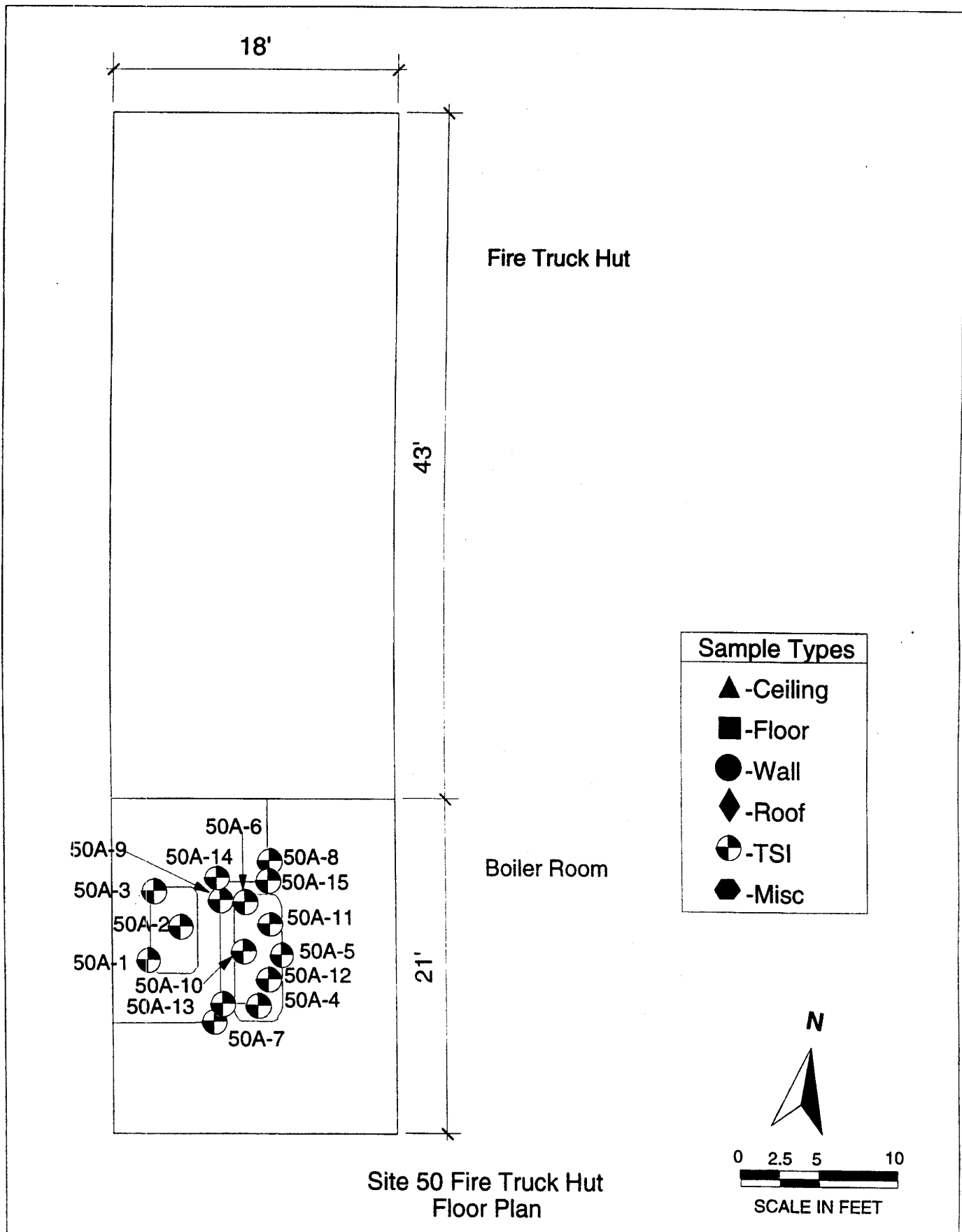
Recommendations

Recommendations for this site include the removal of all TSI ACM (see Figure 50-2 for asbestos abatement plan). Remove entire pipe network (pipe, fittings, and insulation) together. Abatement of this site will be Class I work. All Class I work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D).

The site is currently a potential hazard. Until such time as removal of the ACM can take place, access to the boiler area should be restricted and the site should be labeled as described in Section 5.1.



Photograph 50: Fire Truck Hut

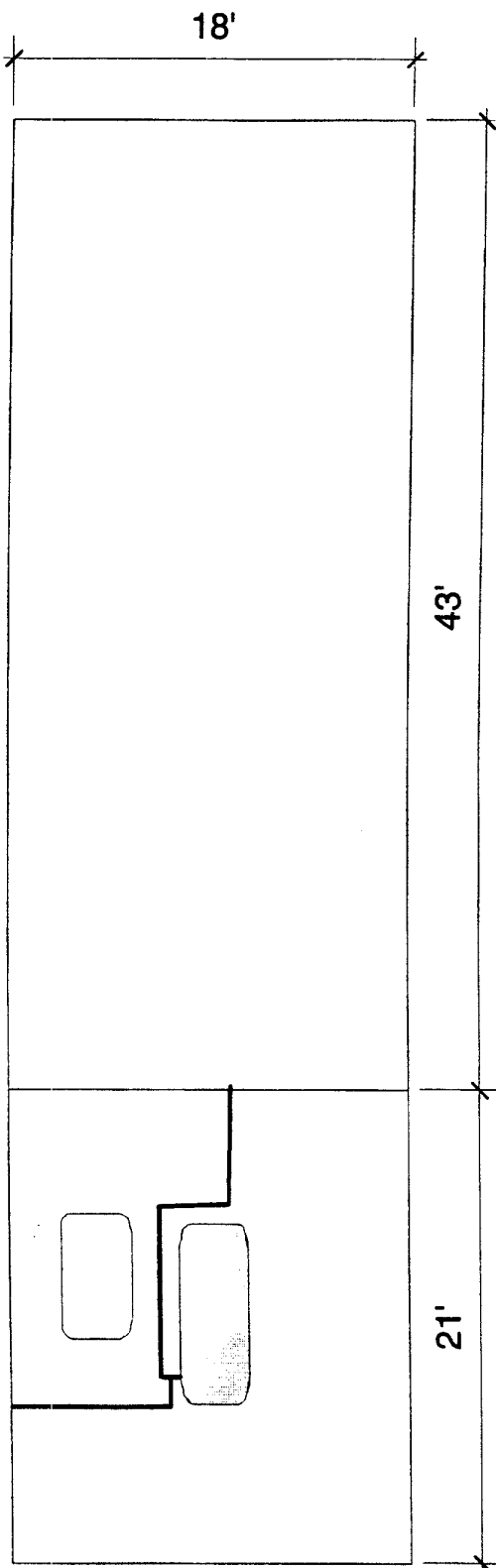


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 ASBESTOS INVENTORY
 & ABATEMENT PLAN

Figure 50-1

Asbestos Sample Locations



Fire Truck Hut

— Pipe & Fittings
 [Shaded Box] Boiler/Tank Insulation

Boiler Room

Recommendations:
 Remove all pipe, pipe fittings and insulation.
 Remove boiler, water tank and insulation.

N

0 2.5 5 10
 SCALE IN FEET

Site 50 Fire Truck Hut
 Floor Plan



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Figure 50-2

Asbestos Abatement Plan

4.14 Site 53 FAA Housing

Description

The FAA housing area consists of nine three-story, 30-foot x 50-foot, wood-frame structures (see photograph 53). The buildings all have full basements. One of the buildings houses the Metlakatla Indian Community (MIC) forestry and fisheries departments, three are used as residences by MIC members, and five are vacant. Similar construction materials were used in all of the vacant and occupied buildings. The five vacant buildings still have boilers and piping in the basements. In the occupied buildings, the boilers have been removed. Material samples were taken from the vacant buildings to limit destruction to intact materials.

Suspect Materials

Twenty samples of fourteen suspect ACMs were collected. Materials sampled in the boiler room were boiler insulation, boiler door gasket, pipe and pipe fitting insulation, fire brick, and gypsum ceiling material (see Figure 53-1 for sample locations). The boiler room walls have transite wallboard, which is assumed to be ACM. There is also a fire door in each of the basements that is assumed ACM. From the upper floors, materials sampled were of the following types: ceiling tile and associated cement, floor tile and mastic, stair tread and mastic, gypsum wallboard, and pipe wrap (see Figure 53-2 for sample locations). Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information.

Asbestos-Containing Materials

- Pipe fitting insulation contains amosite and chrysotile asbestos
- Boiler door gasket contains chrysotile asbestos
- Transite wallboard assumed to be ACM
- Fire door assumed to be ACM
- Ceiling tiles contain chrysotile asbestos
- Floor tiles and mastic contain chrysotile asbestos

Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity*	Unit
53A-1, -2	Boiler Room	Pipe fitting insulation	27ELs/9Ts**	EA
53A-6	Boiler Room	Boiler door gasket	2**	LF
NA	Boiler Room	Transite wallboard	304**	SF
NA	Basement	Fire door	7'Hx9'Wx2"D	EA
53A-11,-18,-20	Apts	Ceiling tiles	4,406	SF
53A-12	Apts	Floor tiles and mastic	4,535	SF
53A-16	Stairwell	Floor tiles and mastic	192	SF

* per unit

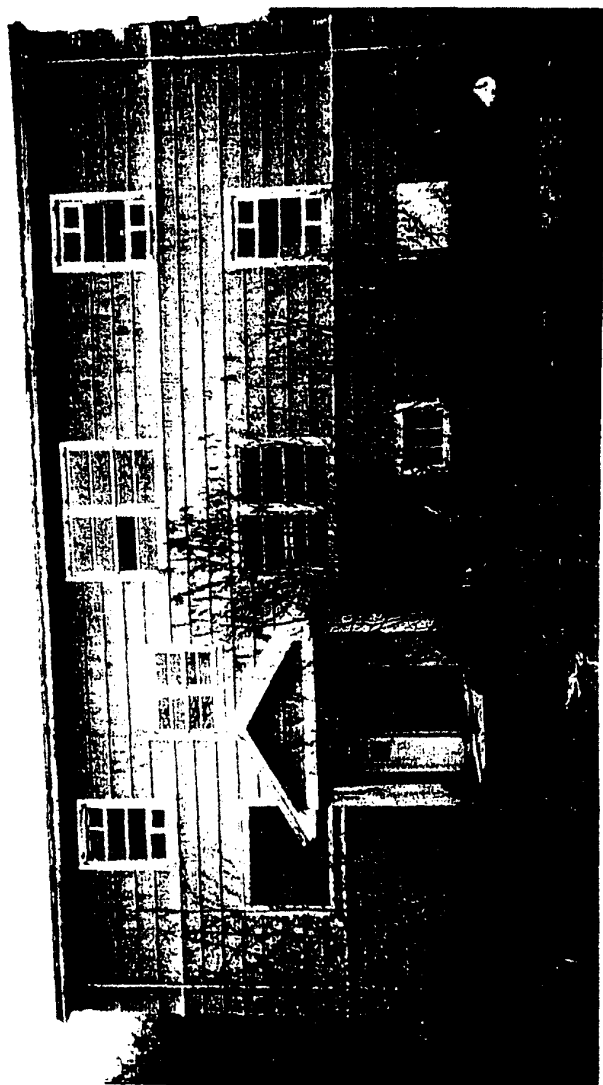
** per unoccupied unit only

Recommendations

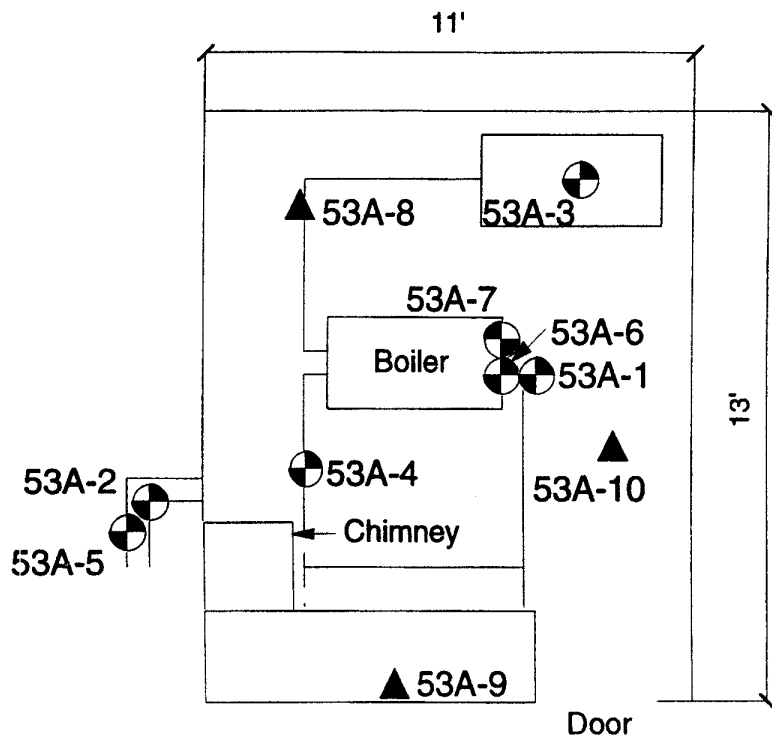
ACM in the unoccupied buildings is significantly damaged, with the potential for future continued disturbance. The pipe fittings and gasket material are TSI and friable. These materials should be removed (see Figure 53-3 for asbestos abatement plan). This abatement is Class I work. All Class I work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D). It is recommended that all other ACM be

removed from the unoccupied buildings (see Figure 53-4 for asbestos abatement plan). This removal is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).

Removal and replacement of ceiling and floor tiles in the occupied buildings are recommended. This removal is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).

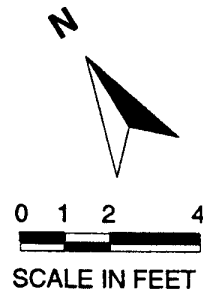


Photograph 53: FAA Housing Area



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
◐	-TSI
⬡	-Misc

Site 53 FAA Housing
Basement Boiler Room

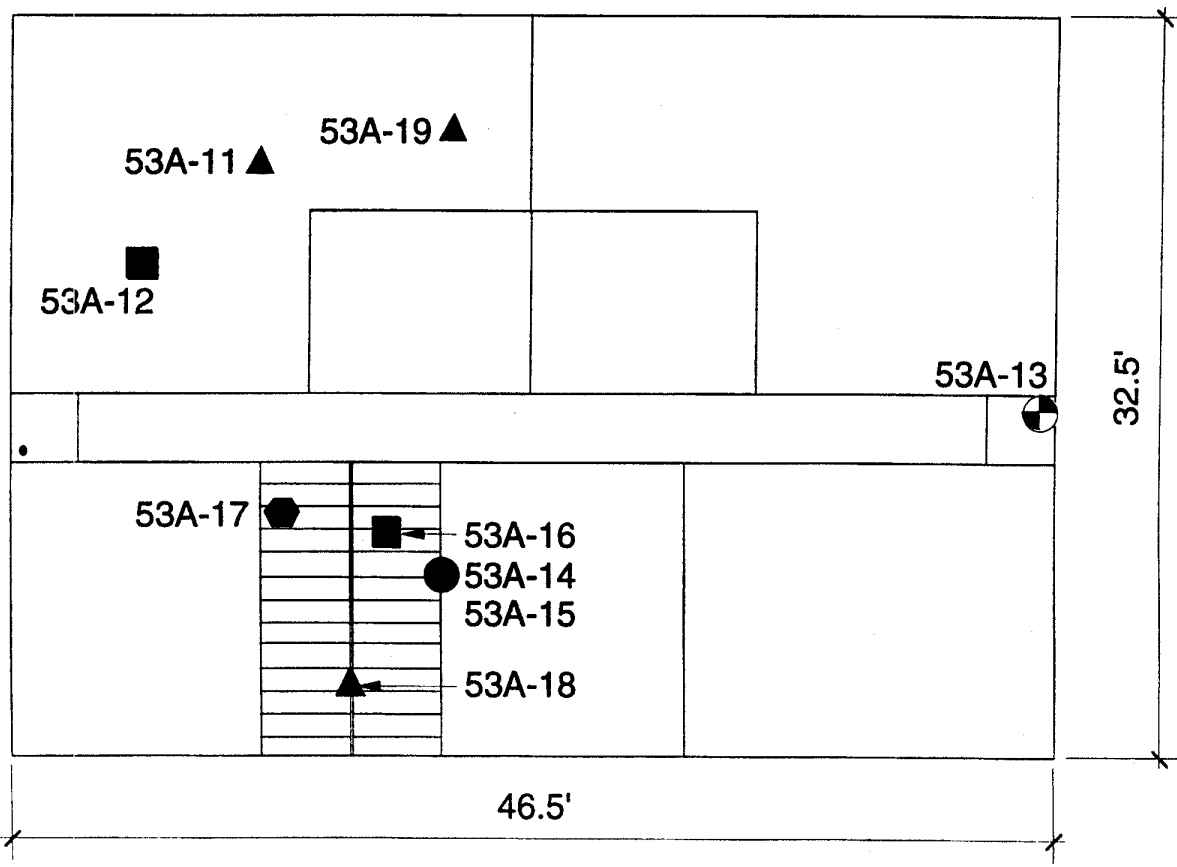


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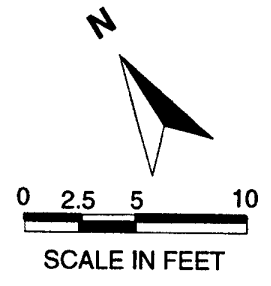
Figure 53-1

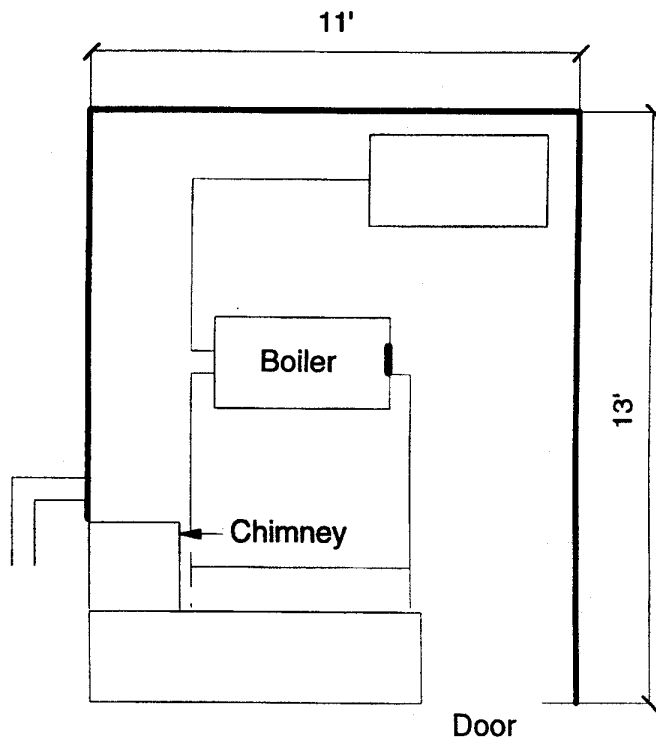
Asbestos Sample Locations



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊗	-TSI
⬡	-Misc

Site 53 FAA Housing
Floor Plan





Recommendations:
 Remove all pipe fittings.
 Remove gasket material.
 Remove transite wall board.

— Transite Wall Board
 — Boiler Door Gasket



0 1 2 4
 SCALE IN FEET

Site 53 FAA Housing
 Basement Boiler Room

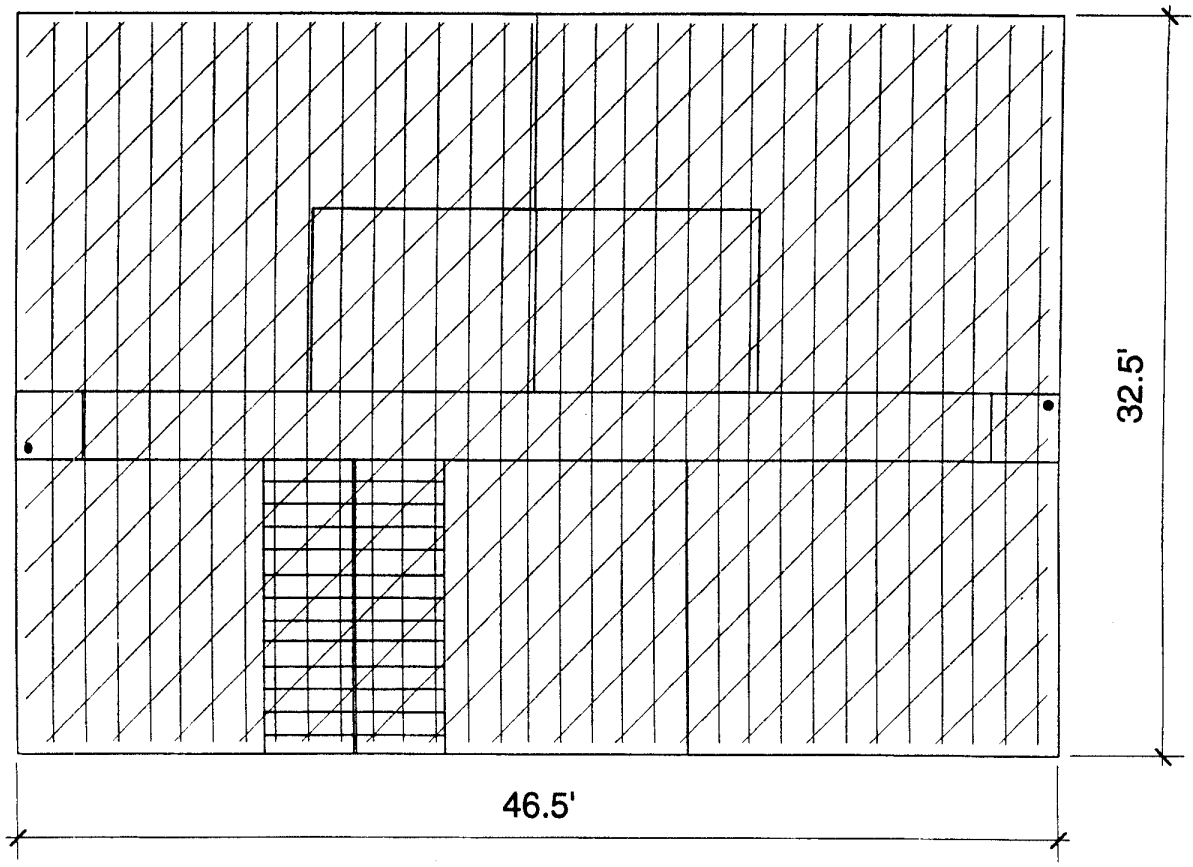


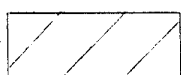

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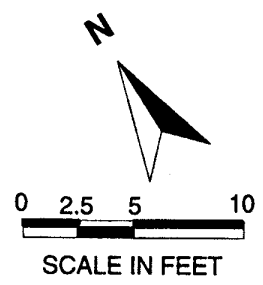
Figure 53-3

Asbestos Abatement Plan



-  Floor Tile and Mastic
-  Ceiling Tile

Recommendations:
 Remove floor tile and mastic.
 Remove ceiling tiles.
 In occupied units replace floor and ceiling tiles.



Site 53 FAA Housing
 Floor Plan



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Figure 53-4

Asbestos Abatement Plan

4.15 Site 54 Public School**Description**

The remains of the public school consist of a Z-shaped concrete foundation, a small concrete boiler room (see photograph 54), metal piping, metal structural steel, and metal building debris. The school building burned down several years ago. The boiler room contains an insulated boiler and insulated piping. The debris contains vinyl floor tile, boiler debris, and miscellaneous building materials.

Suspect Materials

Ten suspect ACMs were found at the site. Samples were taken of five of these potential ACMs. Materials sampled were floor and ceiling tiles, concrete walls, and insulation. A composite soil sample was also taken from the debris around the site. The unsampled five materials are TSI; all but the fire brick is assumed to be ACM, probably chrysotile and some amosite. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 54-1 for sample locations.

Asbestos-Containing Materials

- Floor tiles contain chrysotile asbestos
- Roofing tiles contain chrysotile asbestos
- Composite soil sample contains amosite asbestos
- Assume that all TSI material contains asbestos

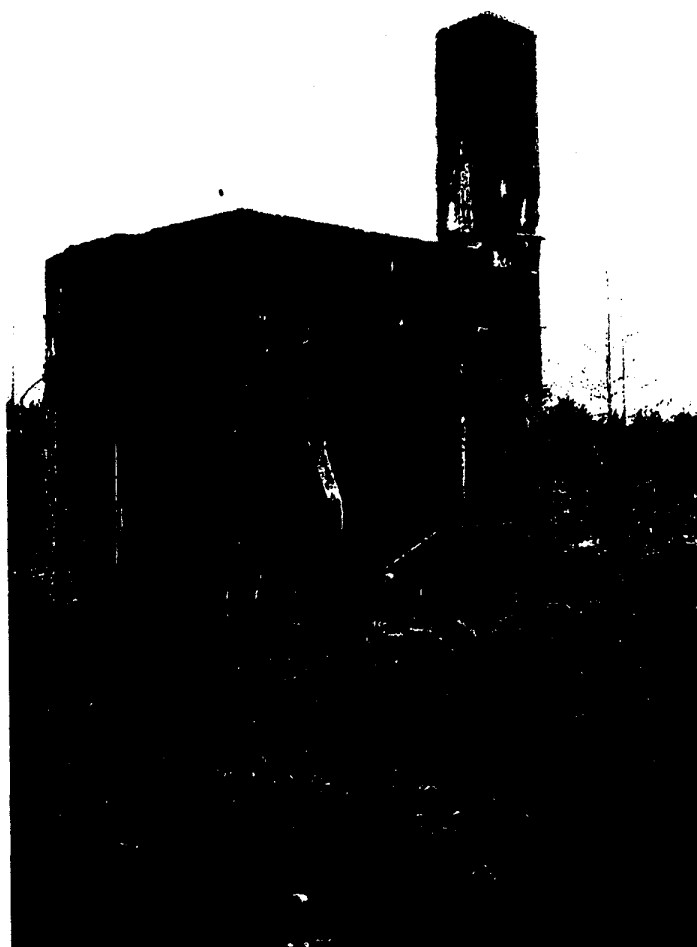
Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
54A-1	School	Composite soil sample	11,000	SF
54A-3	School	Floor tiles	10,735	SF
54A-4	School	Roofing tiles with sand surface	11,000	SF
NA	Boiler	Water tank insulation	62	SF
NA	Boiler	Boiler insulation	193	SF
NA	Boiler	Pipe insulation	100	LF
NA	Boiler	Pipe fitting insulation	40ELs/20Ts	EA

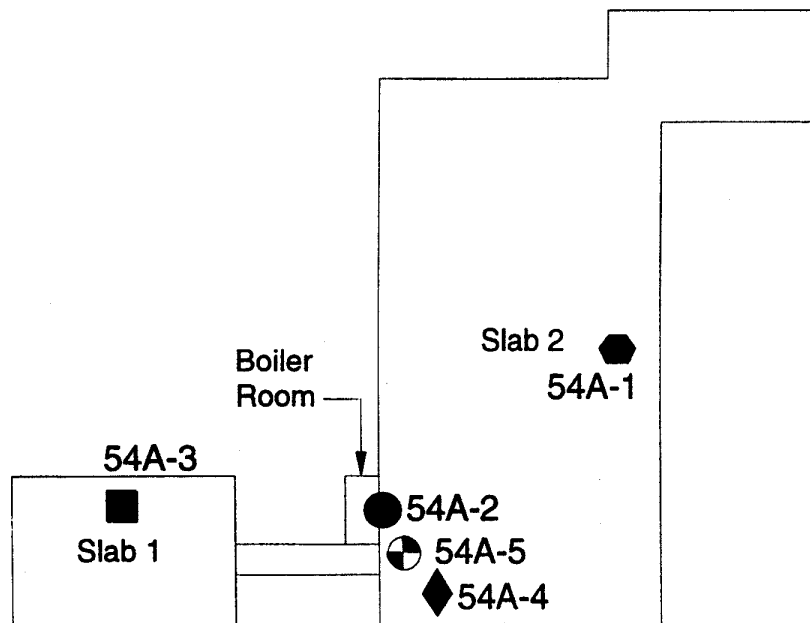
Recommendations

All ACMs are significantly damaged. The TSI materials in the boiler area have the potential for further damage. The recommendation for this site is removal of all ACM (see Figure 54-2 for asbestos abatement plan). Remove the entire pipe network (pipe, fittings, and insulation) together. Cleanup of the boiler area will be Class I work. All Class I work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D). Cleanup of the main school area and debris pile cleanup will be Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). All debris pile work should be performed according to procedures as described in Section 5.1.

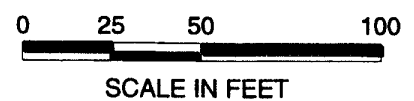
The boiler area is a potential hazard. Until such time as ACM removal in the boiler area can take place, access should be restricted and the site should be labeled as described in Section 5.1.



Photograph 54: Public School



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊕	-TSI
⬡	-Misc



Site 54 Public School
Floor Plan



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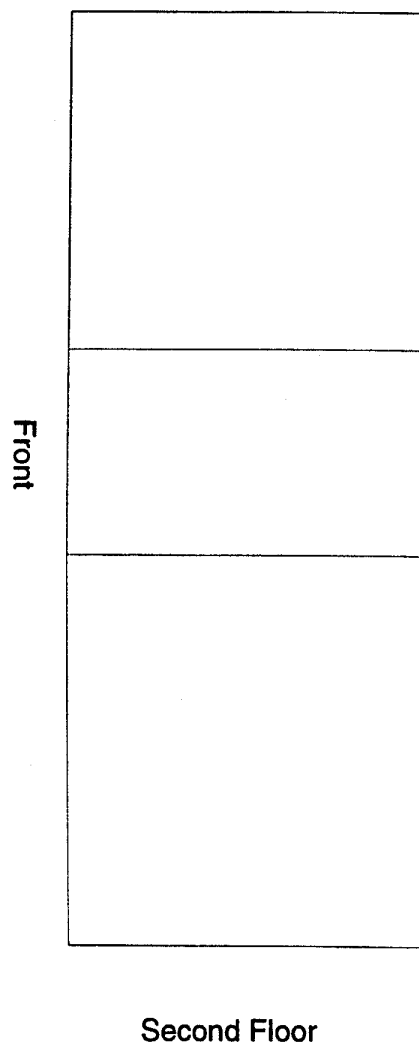
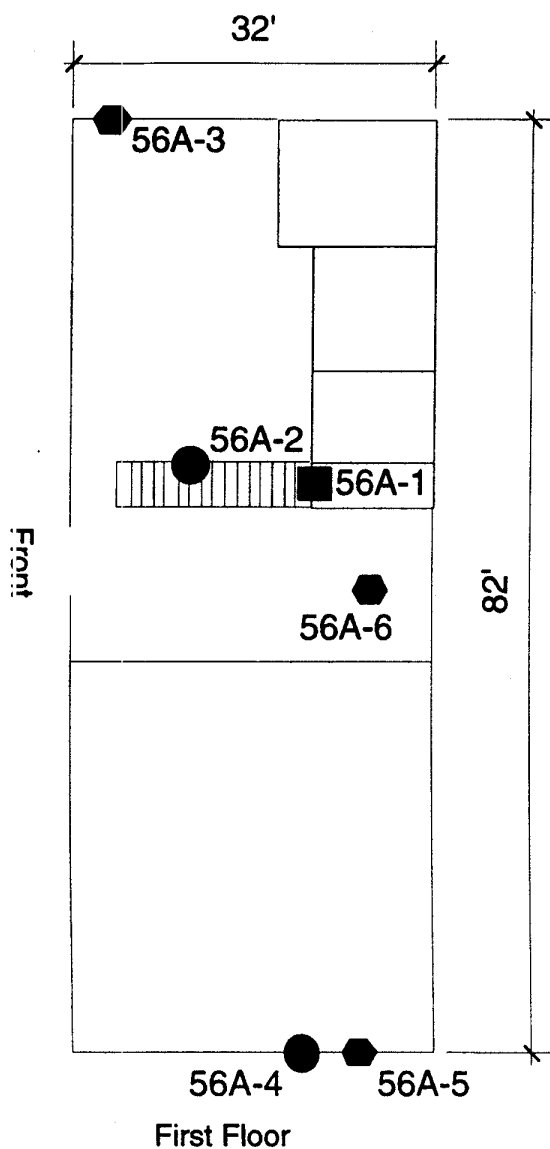
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Figure 54-1

Asbestos Sample Locations



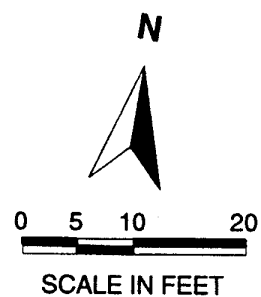
Photograph 56: PNA/WA Residential Building



Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ⊕ -TSI
- ⬡ -Misc

Site 56 PNA Apartments
Floor Plan

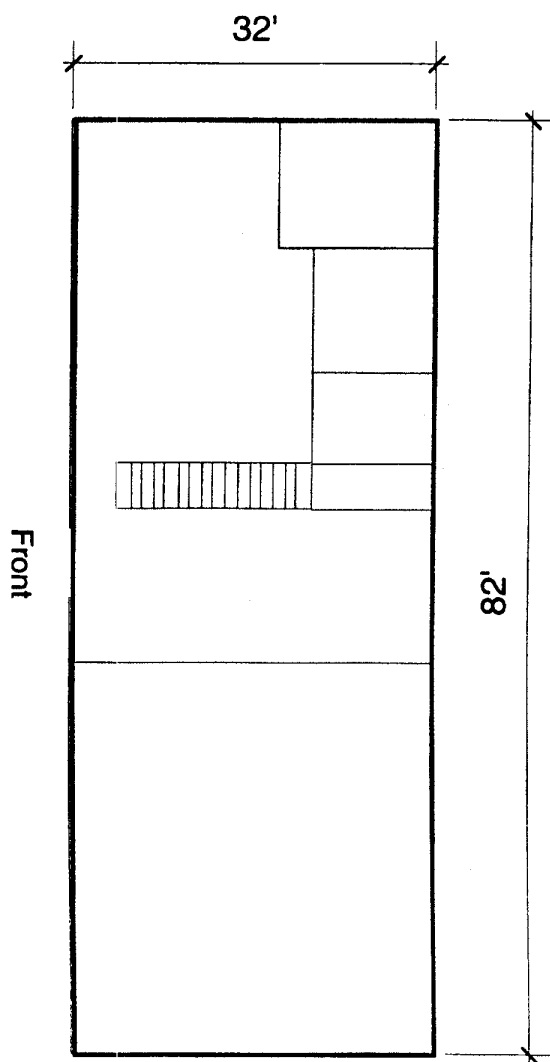


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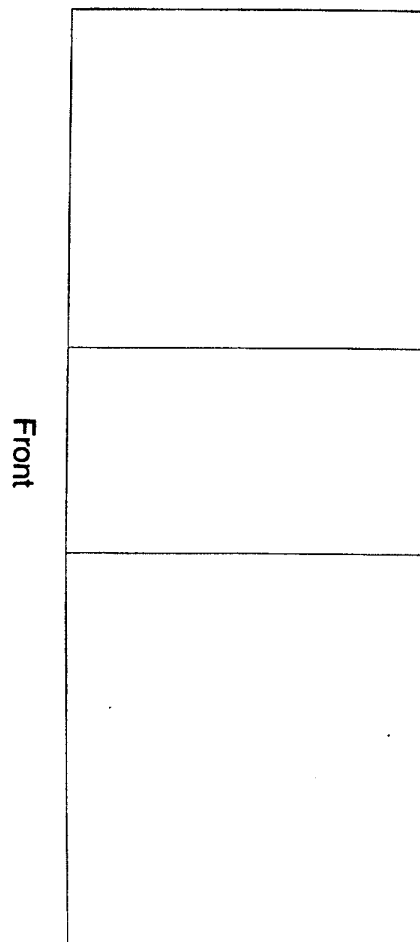
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Figure 56-1

Asbestos Sample Locations

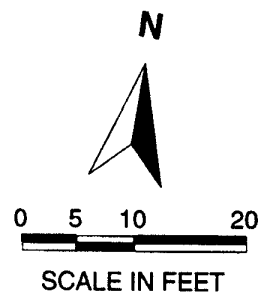


First Floor



Second Floor

Recommendation:
Remove and replace exterior skirting
around building perimeter.



Site 56 PNA Apartments
Floor Plan



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Figure 56-2

Asbestos Abatement

4.17 Site 63 DOD/FAA Remote Receiver StationDescription

The remains of the remote receiver station consist of a single-story, 18-foot x 30-foot concrete block building and a small, faded red-and-white 20-foot tower (see photograph 63). The building used to contain abandoned electronic equipment and vinyl tile flooring. A toppled, faded red-and-white tower is located immediately north of the building. The station pad is bordered by ponded water. The perimeter embankments and nearshore pond areas are littered with what is apparently station-related debris (fuses, electrical conduit, a metal console, and building materials).

Suspect Materials

Suspect ACM was collected from two areas, the debris pile and the building. Two samples of two materials were taken from the debris pile. These materials were transite wallboard and fibrous building paper. From the building, 12 samples of seven suspect ACMs were taken. Materials included the concrete brick and mortar, floor tile and mastic, gypsum wallboard and joint compound, exterior surfacing material, roofing, and electrical conduit. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 63-1 for sample locations.

Asbestos-Containing Materials

- Transite from debris pile contains 70 percent chrysotile asbestos
- Building paper from debris pile contains 90 percent chrysotile asbestos
- Floor tiles and mastic backing contain chrysotile asbestos
- Gypsum wallboard on the ceiling contains chrysotile asbestos

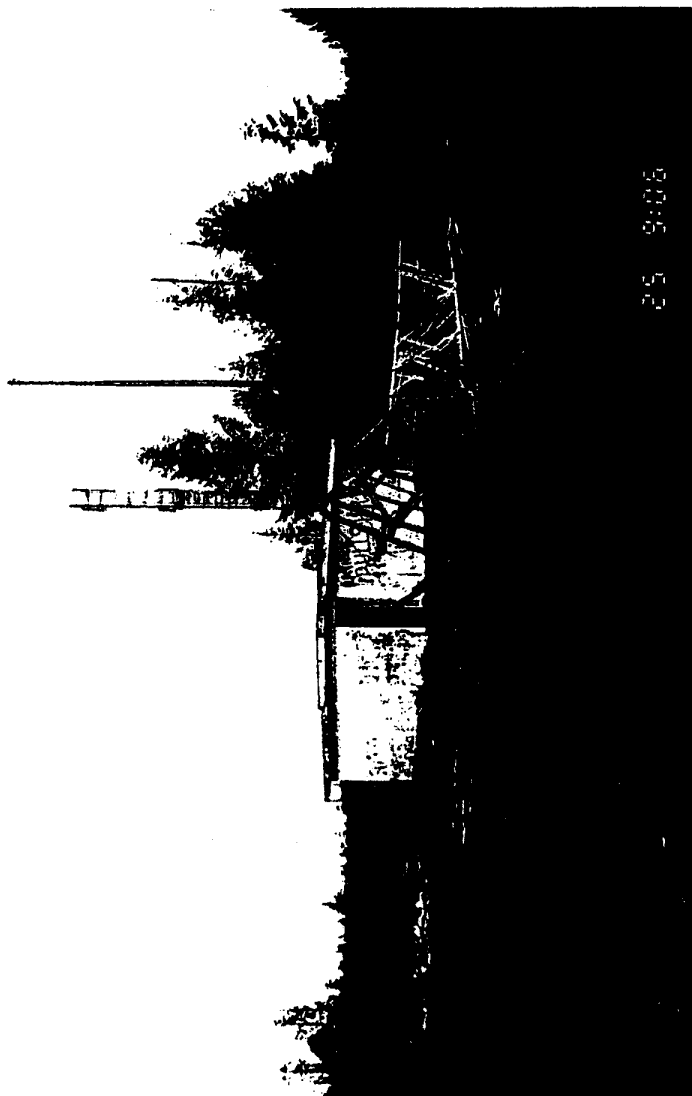
Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
63A-1	Debris	Transite building material	12	CF
63A-2	Debris	Fibrous paper building material	2	CF
63A-8, 9, 10	Floor	Green floor tile and associated mastic	600	SF
63A-11, 12, 13	Ceiling	Gypsum wallboard	600	SF

CF - Cubic foot

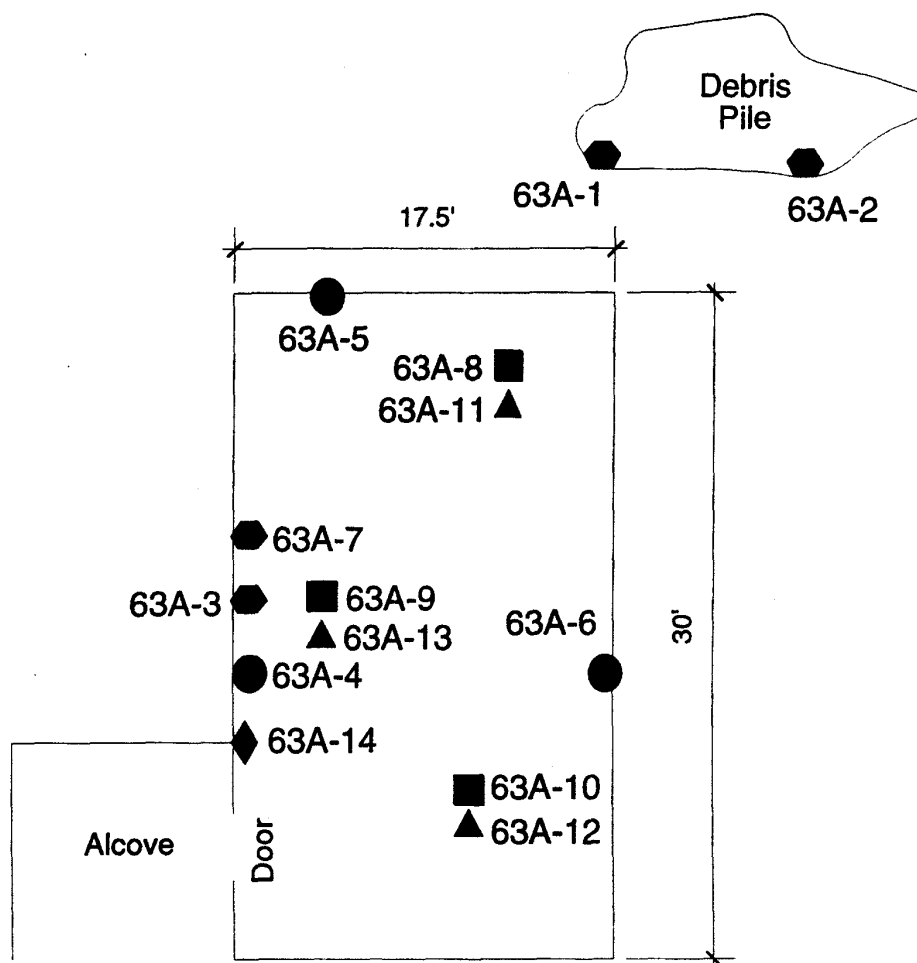
Recommendations

ACM debris materials need to be removed and disposed of according to recommended procedures as described in Section 5.1. Inside the building, the floor tiles, associated mastic, and ceiling material are all significantly damaged. Removal of these ACMs is recommended (see Figure 63-2 for asbestos abatement plan). Removal of the floor tile, mastic, and ceiling is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).

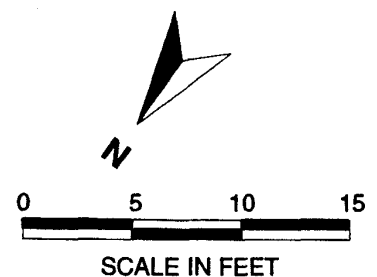


25 9:06

Photograph 63: Remote Receiver Station



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊗	-TSI
⬡	-Misc



Site 63 Remote Receiver Station
Floor Plan

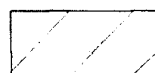
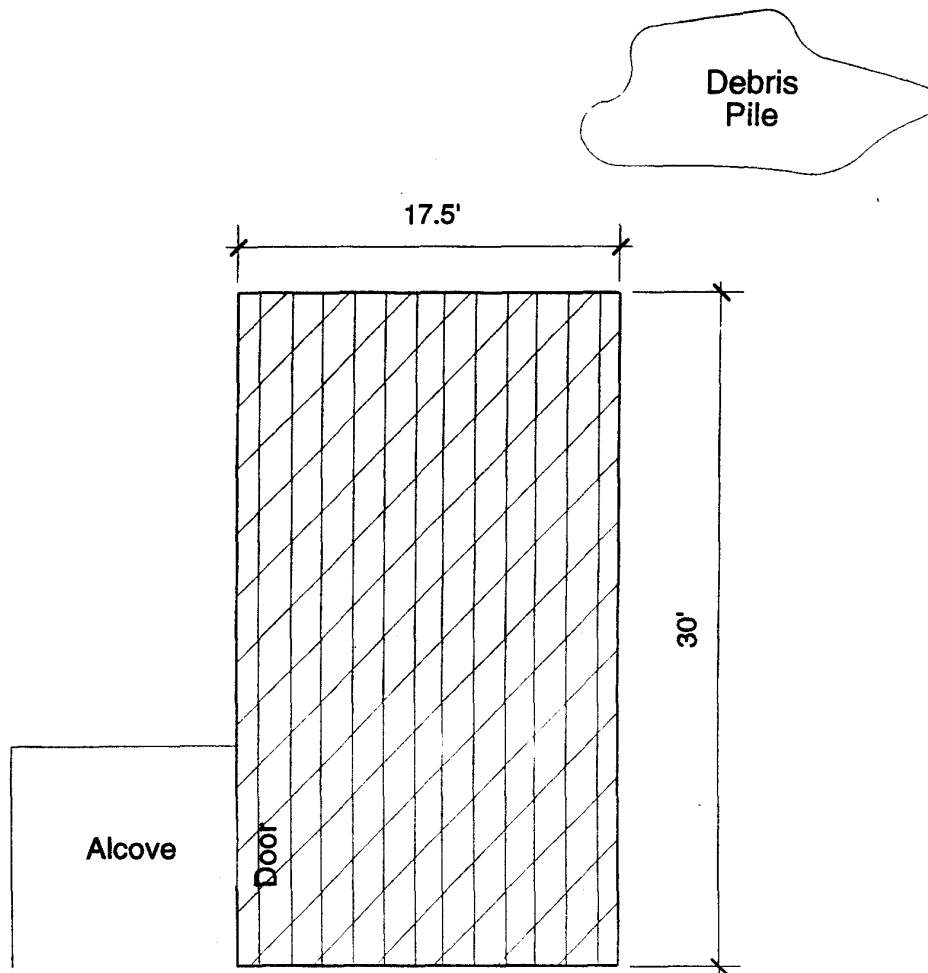


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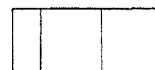
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Figure 63-1

Asbestos Sample Locations

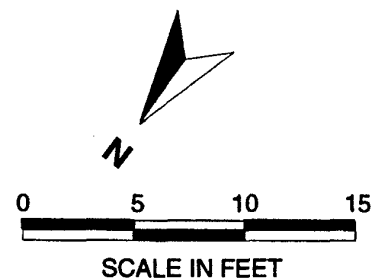


Floor Tiles AND Mastic



Ceiling Gypsum board

Recommendations:
 Remove floor tile and mastic.
 Remove ceiling gypsum board.
 Clean up debris pile.



Site 63 Remote Receiver Station
 Floor Plan



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Figure 63-2

Asbestos Abatement

4.18 Site 67 Weather Bureau StationDescription

The weather station contains two main structures: a 14-foot x 40-foot single-story, wood-frame office building and a 20-foot x 20-foot adjoining storage building. A 20-foot x 30-foot large, domed, wood-frame weather balloon release building is on site to the east, adjacent to a smaller (6-foot x 6-foot) domed instrument building. An instrument gauging area is located between these buildings (see photograph 67).

Suspect Materials

Two samples of three suspect ACMs were collected. Materials sampled included gypsum wallboard at the seam on joint from the large domed building and rubbery red material from inside the small domed building. Another small outbuilding has transite siding; it was not sampled. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 67-1 for sample locations.

Asbestos-Containing Materials

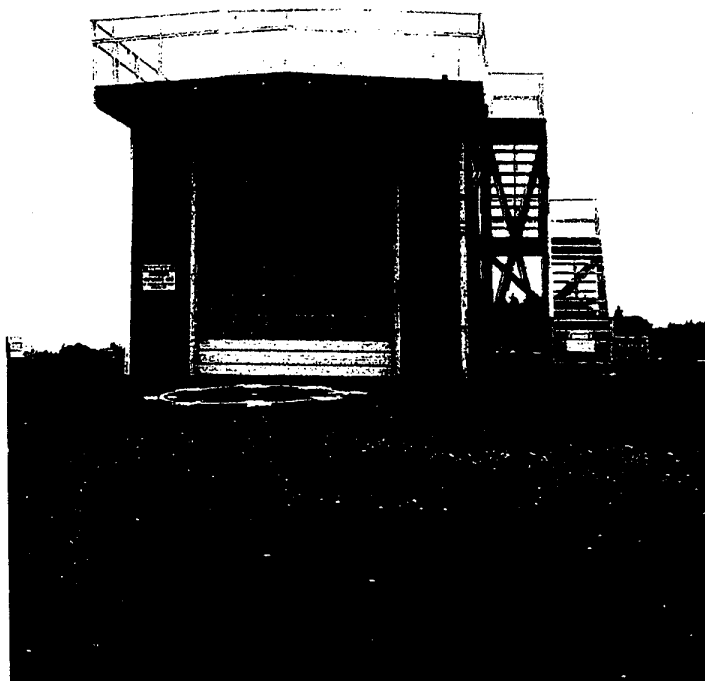
- Transite wallboard is assumed to be ACM

Summary of ACM Quantities

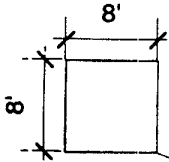
Sample No.	Location	Material Description	Quantity	Unit
NA	Interior	Transite wallboard	192	SF

Recommendations

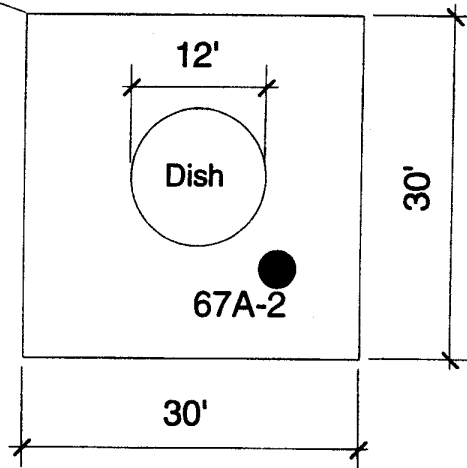
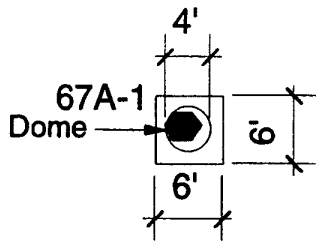
The transite wallboard is in good condition, with potential for disturbance. Removal and replacement of the wallboard are recommended. Removal is Class II. All work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). See Figure 67-2 (asbestos management plan).



Photograph 67: Weather Bureau Station



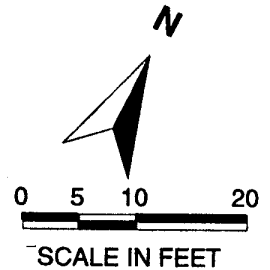
~ 200'



Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ⊕ -TSI
- ⬢ -Misc

Site 67 Weather
Bureau Station

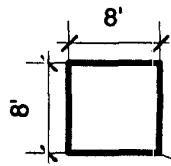


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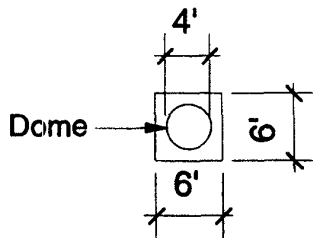
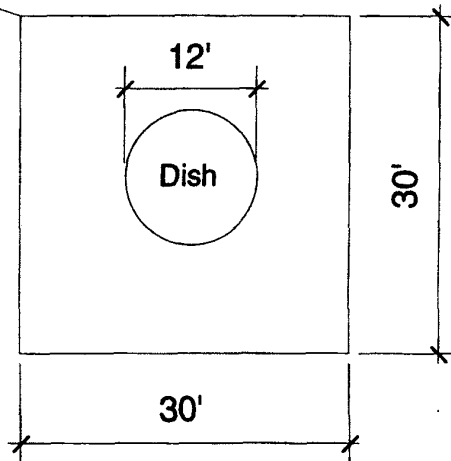
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Figure 67-1

Asbestos Sample Locations



~ 200'

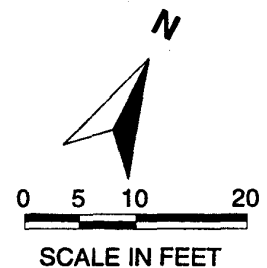


Dome

Transite Wallboard

Recommendations:
Remove and replace interior transite.

Site 67 Weather
Bureau Station



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& ABATEMENT PLAN

Figure 67-2

Asbestos Abatement Plan

4.19 Site 68 USCG Water Treatment Plant

Description

The USCG treatment plant building is partially dismantled. The roof has been removed and the walls are partially knocked down (see photograph 68). It was a 20-foot x 30-foot wood-frame building. The building contains empty aluminum vats and a control panel room. The building had cementitious transite exterior siding and interior walls.

Suspect Materials

Five samples of three suspect ACMs were taken. Materials included outside piping insulation and both interior and exterior wall material. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 68-1 for sample locations.

Asbestos-Containing Materials

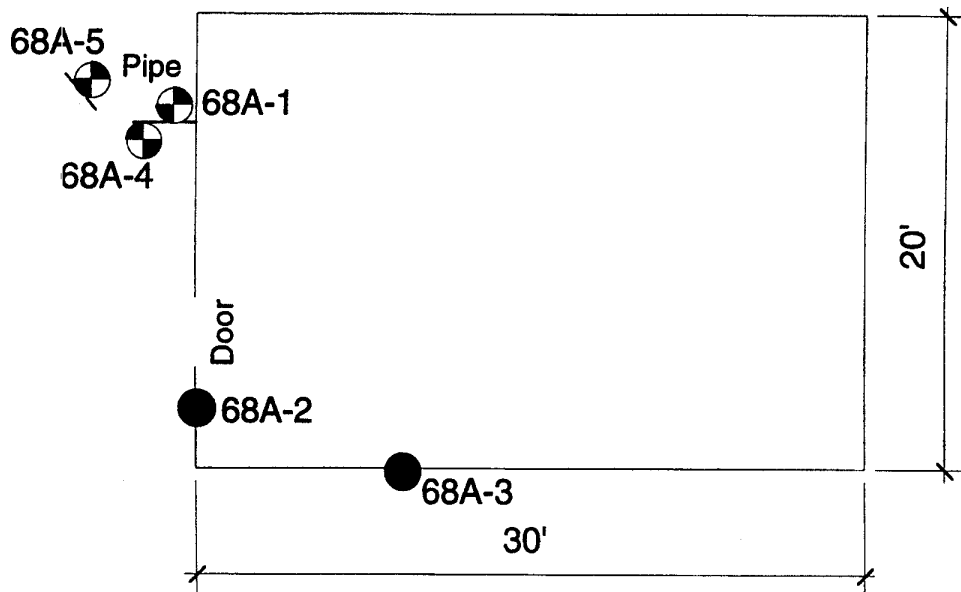
- Interior transite wallboard contains chrysotile asbestos
- Exterior transite wallboard contains chrysotile asbestos

Summary of ACM Quantities

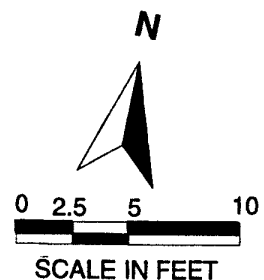
Sample No.	Location	Material Description	Quantity	Unit
68A-2	Exterior	Transite wallboard	1,200	SF
68A-3	Interior	Transite wallboard	1,200	SF

Recommendations

Both materials are significantly damaged, with the potential for continuing disturbance. Removal of both wallboard materials is recommended (see Figure 68-2 for asbestos abatement plan). Removal of this material is Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊗	-TSI
⬢	-Misc



Site 68 USCG Water Treatment Plant
Floor Plan

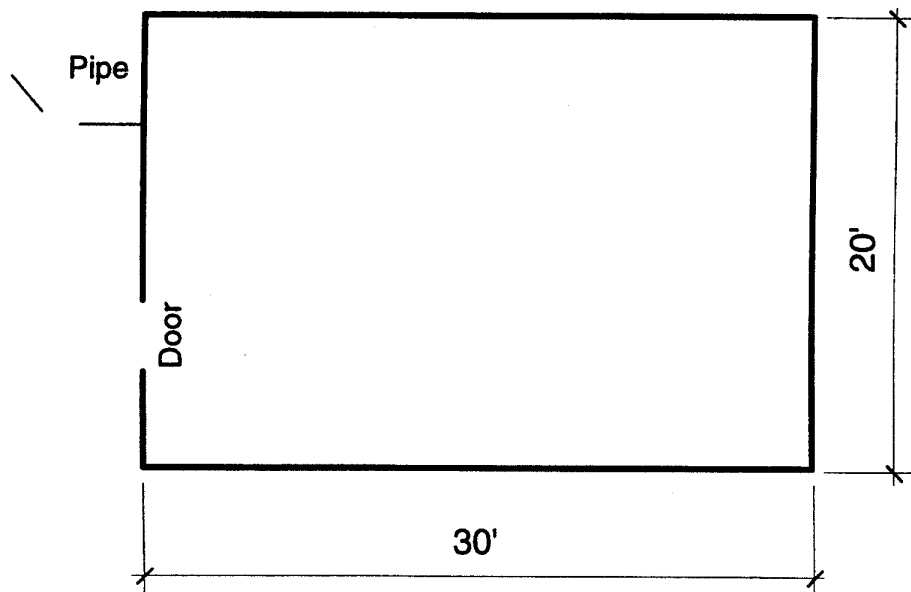


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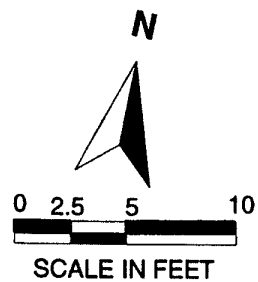
**METLAKATLA PENINSULA
ASBESTOS INVENTORY
& ABATEMENT PLAN**

Figure 68-1

Asbestos Sample Locations



Recommendation:
Remove interior and exterior wall board.



Site 68 USCG Water Treatment Plant
Floor Plan



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ASBESTOS INVENTORY
& ABATEMENT PLAN**

Figure 68-2

Asbestos Abatement Plan



Photograph 68: USCG Water Treatment Plant

4.20 Site 69 USCG Quarters

Description

The remains of the Coast Guard quarters consist of a two-story, T-shaped building that is divided into individual living units and shared lavatories (see photograph 69). The building has a boiler room containing an insulated boiler, water tank and piping, vinyl tile flooring, and transite cementitious exterior siding. In 1997, a local entity started dismantling the structure. Work was halted when suspect ACMs were encountered. The building is currently flagged as an Asbestos Hazard Area.

Suspect Materials

Twenty-six samples were taken of 14 suspect ACMs. Materials in the boiler room are pipe and pipe fitting insulation and water tank and boiler insulation. All boiler room materials are TSI. In the apartments and kitchen areas, materials included ceiling tiles, floor tiles and mastic, cove base and mastic, fibrous wallboard, wall insulation, wainscoting wallboard, gypsum wallboard, and walk-in cooler insulation. The building exterior has transite wallboard and a composite roof. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 69-1 for sample locations.

Asbestos-Containing Materials

- Domestic cold water lines have chrysotile asbestos
- Pipe fitting insulation contains both chrysotile and amosite asbestos
- Water tank and boiler insulation contains both chrysotile and amosite asbestos
- Gypsum wallboard contains chrysotile asbestos
- Floor tiles and mastic contain chrysotile asbestos
- Mastic material on the cove base contains tremolite asbestos
- Composite roof contains chrysotile asbestos
- Transite exterior wallboard contains chrysotile asbestos

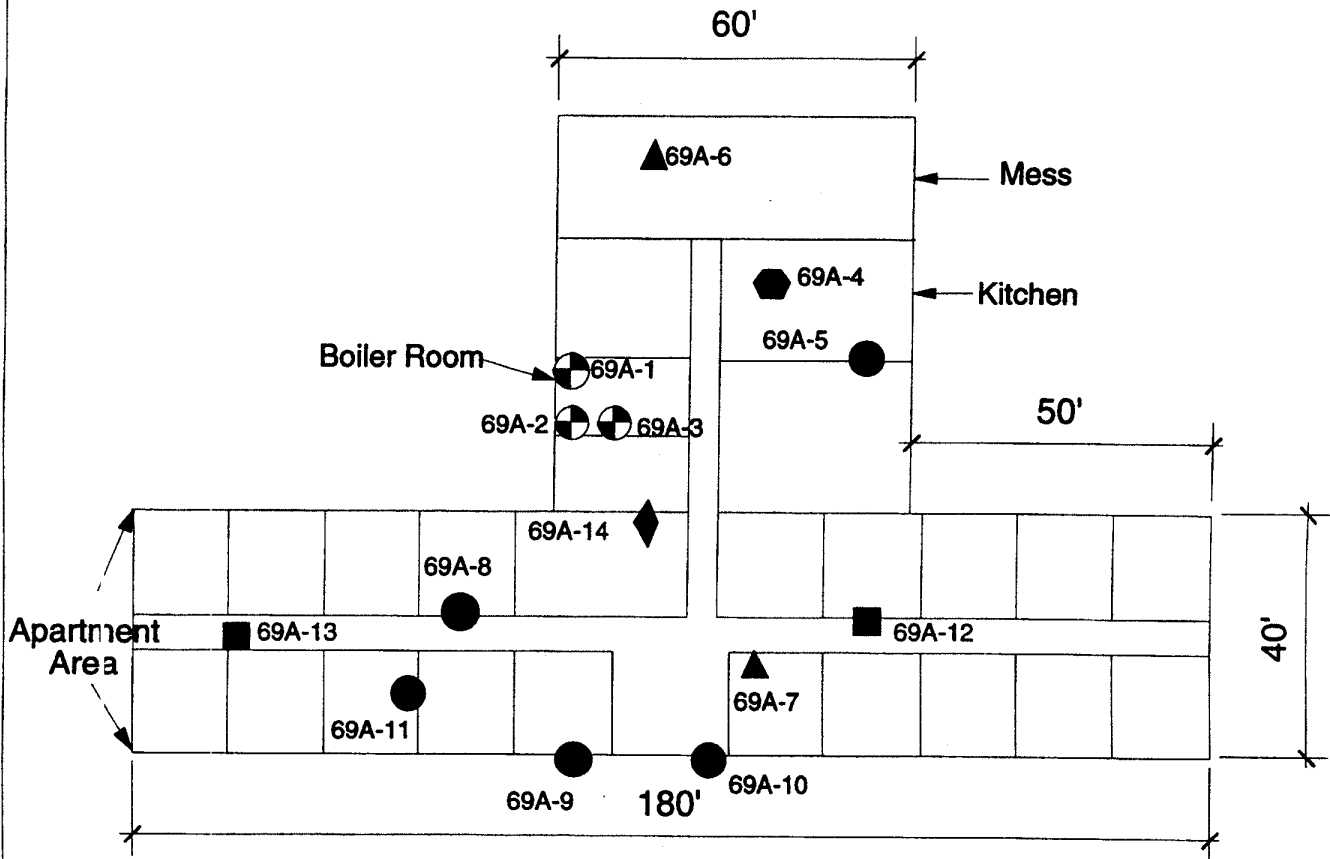
Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
69A-1, -18 -19, -20	Boiler/Apts	Pipe fitting insulation	362ELs/ 170Ts	EA
69A-2	Boiler Room	Water tank and boiler insulation	500	SF
69A-8	Apts	Gypsum wallboard	25,000	SF
69A-13	Apts	Floor tiles and mastic	17,600	SF
69A-12	Apts	Mastic on cove base	1,200	LF
69A-14	Exterior	Composite roof	11,100	SF
69A-10	Exterior	Transite wallboard	13,600	SF
69A-22, -24	Boiler/Apts	Pipe wrap insulating material	2,635	LF

Recommendations

All materials are significantly damaged, with the potential for further disturbance. The current semi-demolished state of the building warrants total demolition of the structure. The pipe fitting, pipe wrap insulation, and water tank and boiler insulation are friable TSI materials. All ACM should be removed before demolition. Remove entire pipe network (pipe, fittings, and insulation) together. Removal of these TSI materials is Class I work. All Class I work must be

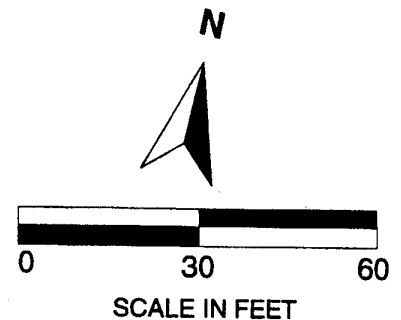
performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D). Removal of all the other ACM will be Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D). See Figure 69-2 (asbestos abatement plan).



Samples 69A-15 through 69A-26 are all TSI materials.
 Samples were taken in boiler room and apartments where
 ever accessible. See ACM Data Tables in Appendix B for location descriptions.

Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
⊕	-TSI
⬡	-Misc

Site 69 USCG Quarters
 Floor Plan

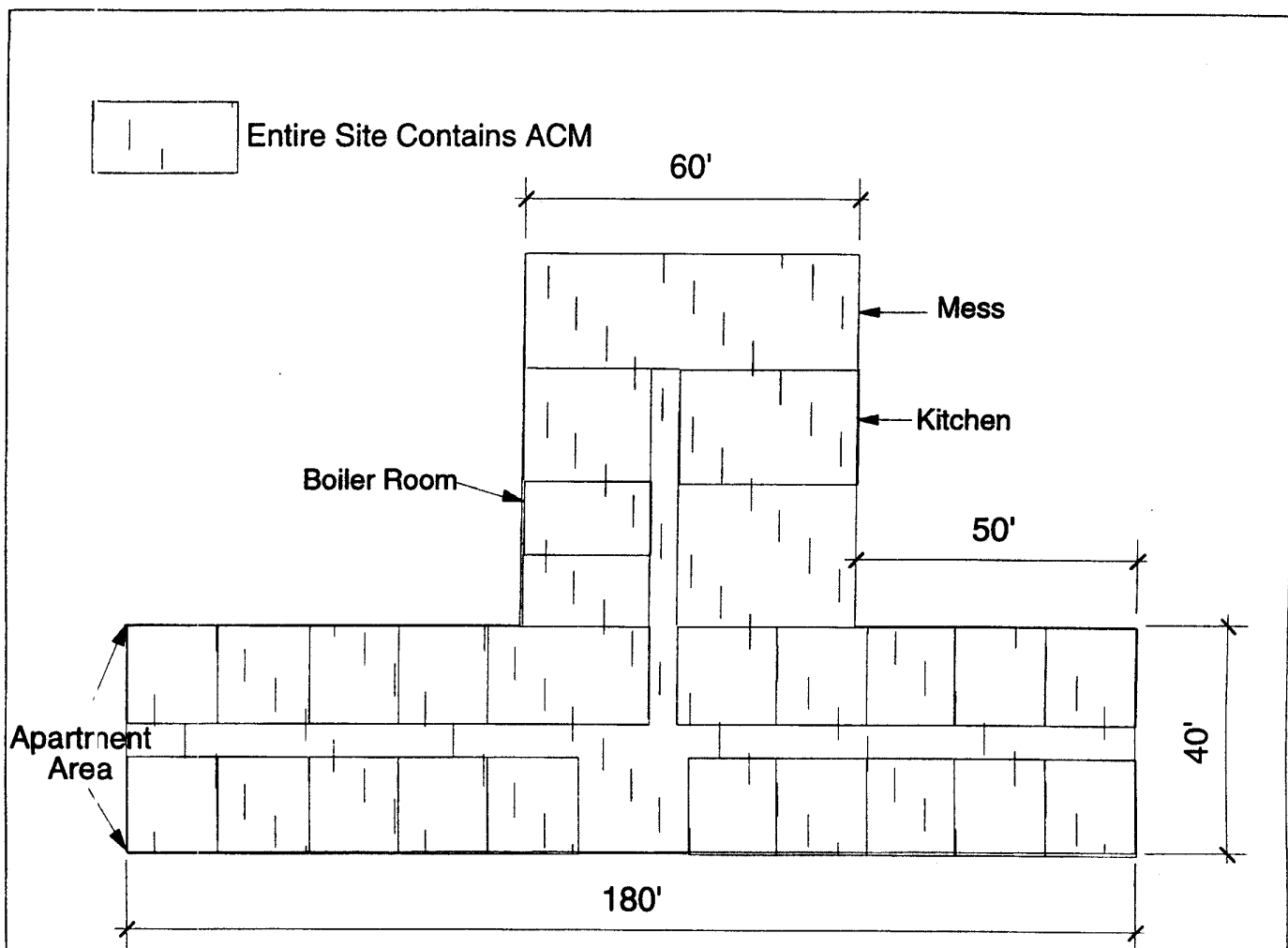


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 & ABATEMENT PLAN**

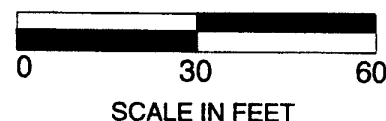
Figure 69-1

Asbestos Sample Locations



Recommendations:

- Remove pipe network in all areas.
- Remove boiler and water tank insulation.
- Remove exterior transite siding and clean up materials already removed from building.
- Remove interior gypsum wall board.
- Remove floor tiles and mastic (remove underlayment and all if possible).
- Remove cove base and mastic material (may be removed with gypsum board).
- Remove composite roof.



Site 69 USCG Quarters
Floor Plan

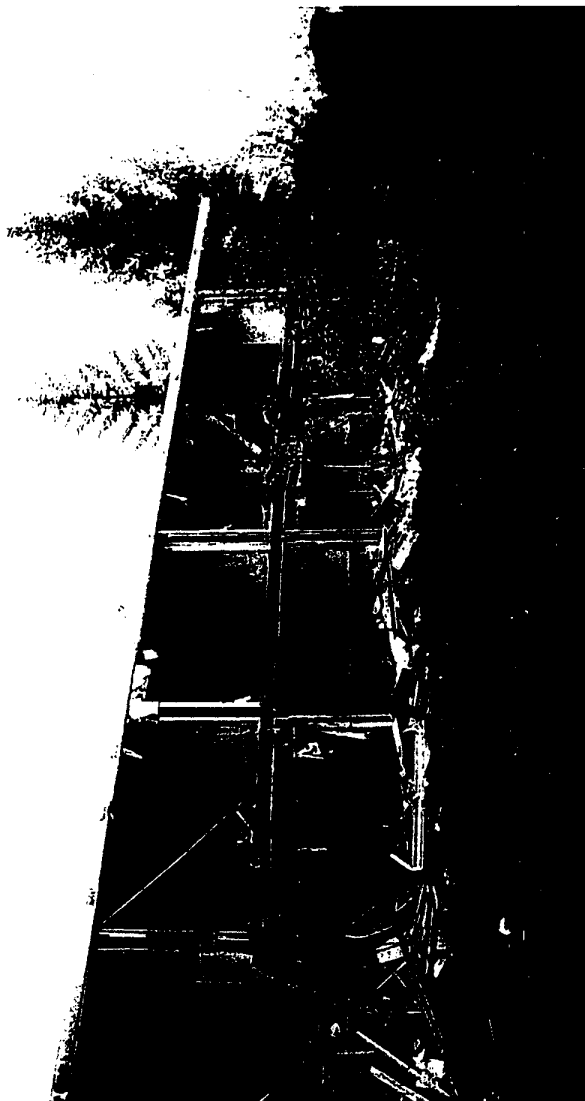


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& ABATEMENT PLAN**

Figure 69-2

Asbestos Abatement Plan



Photograph 69: USOG Quarters

4.2.1 Site 71 USCG GarageDescription

The garage is a 40-foot x 120-foot metal building (see photograph 71). The structure was primarily used by the Coast Guard as an office building and a garage. The building is currently being used by Metlakatla Forest Products to store spare parts, barrels of lubricants, and other petroleum-related products and to perform maintenance on sawmill equipment and vehicles.

Suspect Materials

Eight samples of eight suspect ACMs were taken. Materials included transite wallboard, wall and ceiling insulation, gypsum wallboard, fiberboard decking, cove base with mastic, and two types of floor tiles and mastic. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 71-1 for sample locations.

Asbestos-Containing Materials

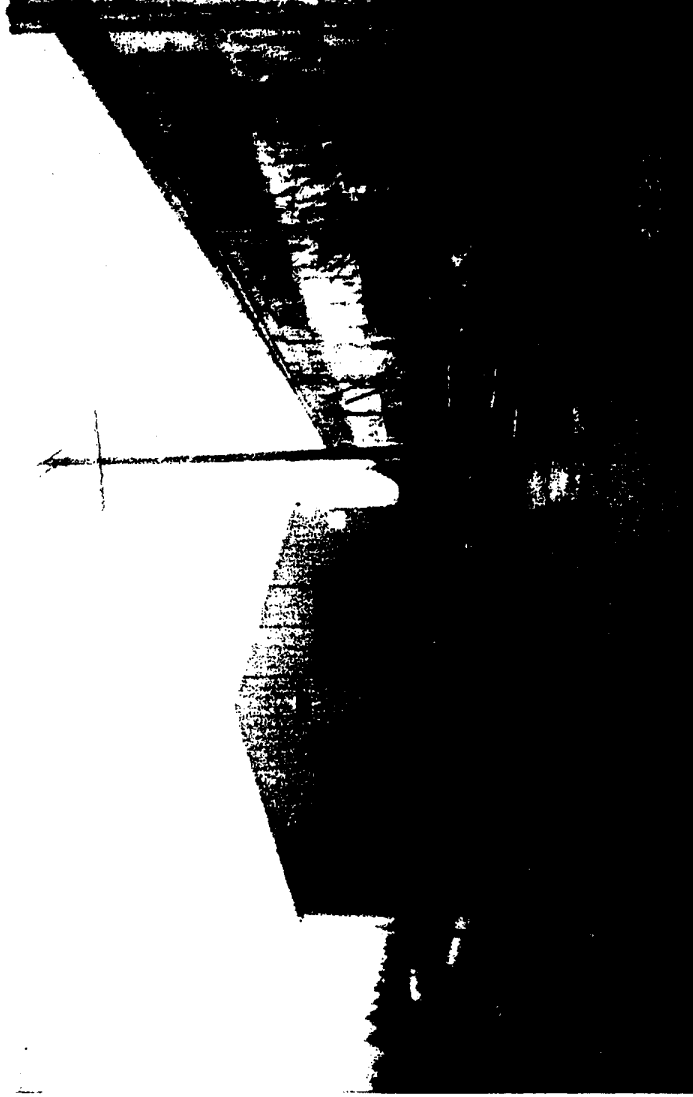
- Transite wallboard contains chrysotile asbestos
- Gypsum wallboard contains chrysotile asbestos
- White floor tile contains chrysotile asbestos
- Green floor tile contains chrysotile asbestos

Summary of ACM Quantities

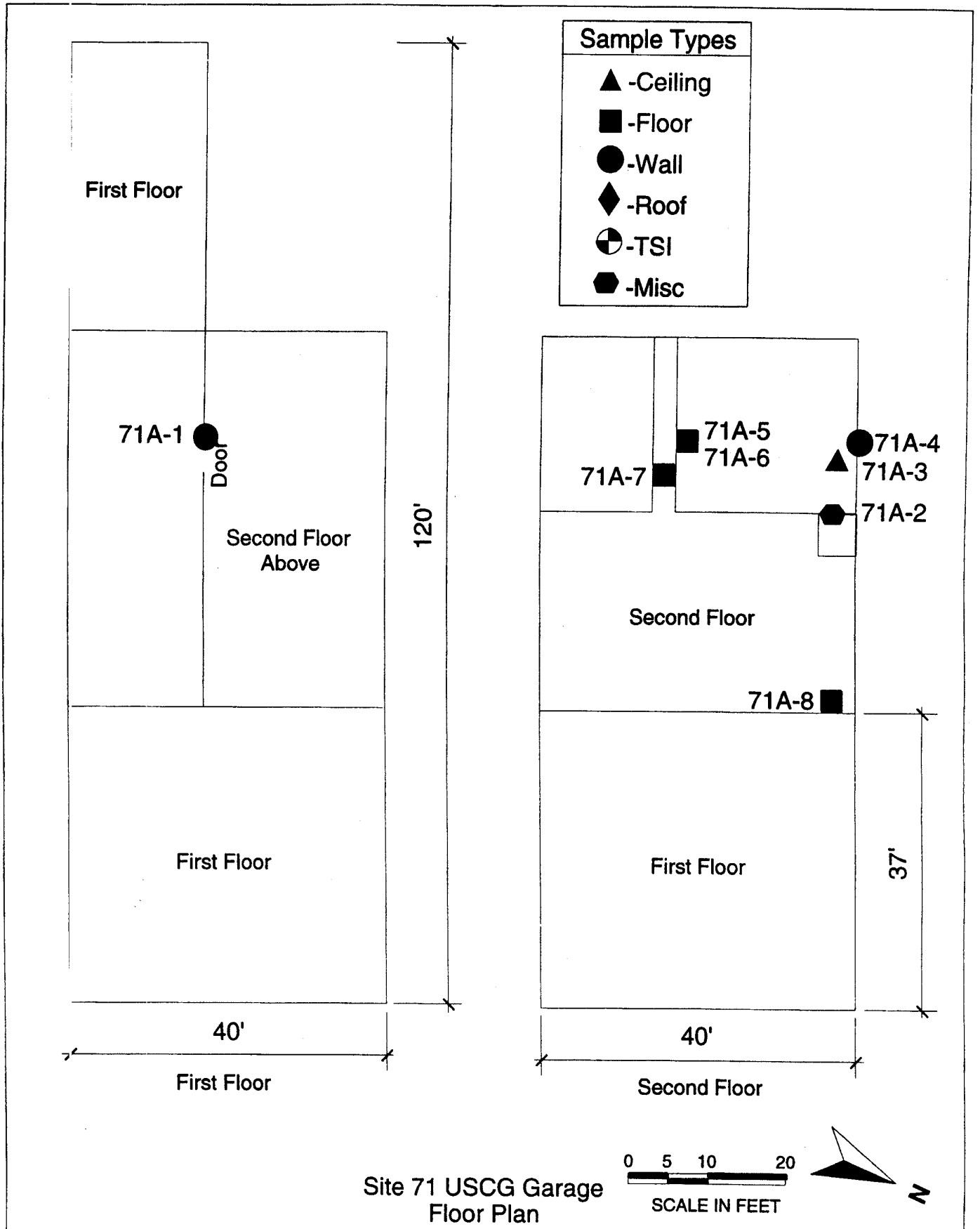
Sample No.	Location	Material Description	Quantity	Unit
71A-1	1st Floor	Transite wallboard	664	SF
71A-4	2nd Floor	Gypsum wallboard	2,588	SF
71A-6	2nd Floor	White floor tile	506	SF
71A-7	2nd Floor	Green floor tile	374	SF

Recommendations

All materials are in good condition, with the potential for disturbance. Removal of transite wallboard on first floor and floor tiles on the second floor is recommended (see Figure 71-2 for asbestos abatement plan). Removal and replacement of gypsum board on the second floor ceilings and walls are recommended. These removal actions are Class II work. All Class II work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class II work (see Appendix D).



Photograph 71: USCG Garage



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& ABATEMENT PLAN**

Figure 71-1

Asbestos Sample Locations

4.22 Site 72 Hangar Boiler Building**Description**

The boiler building (see photograph 72) is approximately 30 feet x 25 feet x 18 feet and contains two insulated boilers and associated insulated piping.

Suspect Materials

Ten samples of five suspect ACMs were collected. Suspect materials included fire brick inside of boilers, boiler insulation, boiler door insulation, and pipe and pipe fitting insulation. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 72-1 for sample locations.

Asbestos-Containing Materials

- Boiler insulation contains chrysotile and amosite asbestos
- Boiler door gasket contains chrysotile asbestos
- Pipe insulation contains chrysotile asbestos
- Pipe fitting insulation contains chrysotile and amosite asbestos

Summary of ACM Quantities

Sample No.	Location	Material Description	Quantity	Unit
72A-3	Boiler	Boiler insulation	614	SF
72A-4	Boiler	Boiler door insulation	12	SF
72A-5,-7,-8	Boiler	Pipe insulation	85	LF
72A-6	Boiler	Pipe fitting insulation	8ELs/6Ts	EA

Recommendations

All materials are damaged, with the potential for further disturbance. All materials are TSI; removal is recommended. Pipe and pipe fittings and insulation can be removed together as a network. The insulation should be removed from the boilers and the boilers should then be coated with a compatible lockdown material to seal any residual fibers. Removal of these materials is Class I work. All Class I work must be performed according to OSHA Standard 1926.1101 Subpart Z for Class I work (see Appendix D). See Figure 72-2 (asbestos abatement plan).

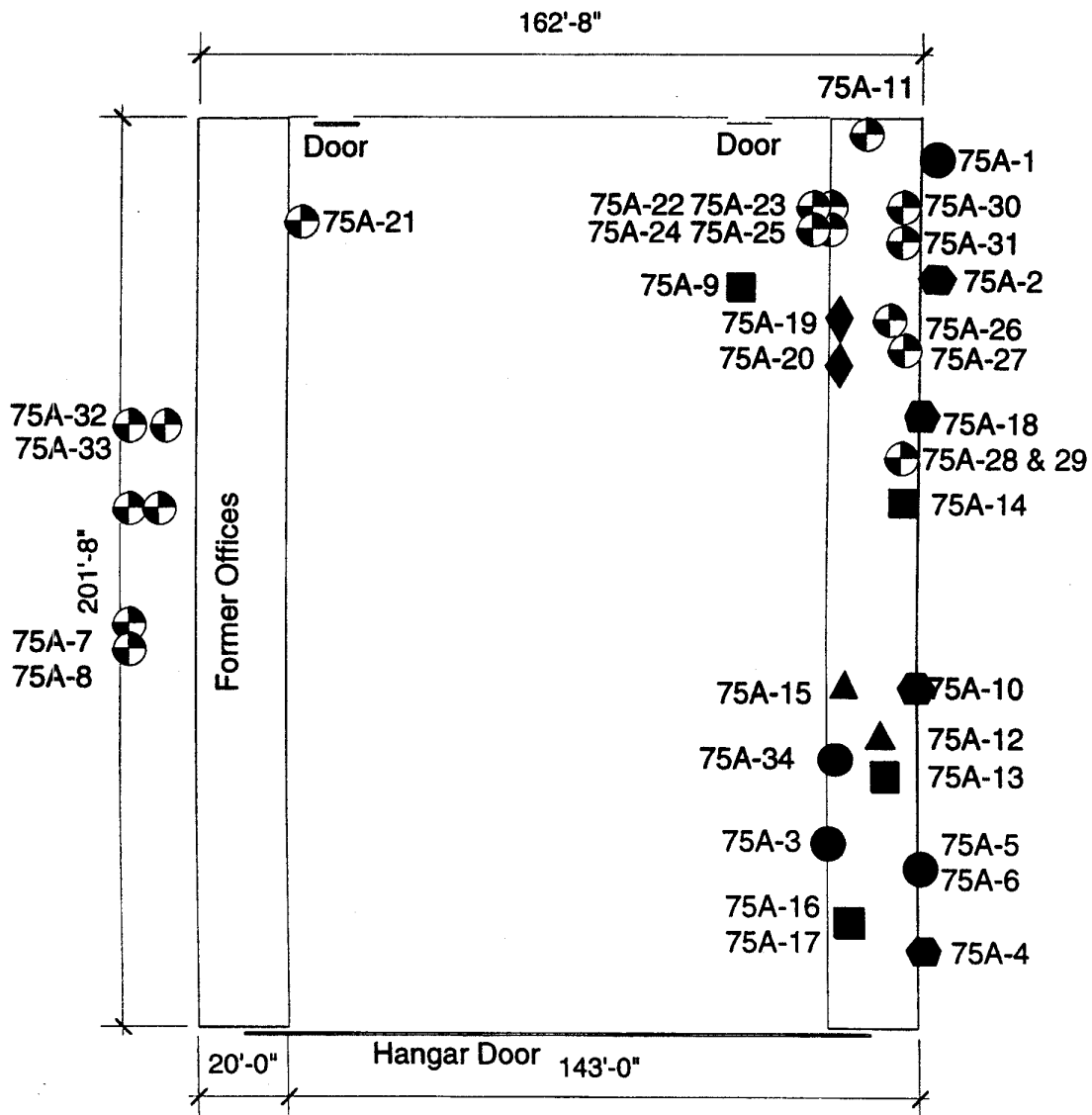
The boiler building is currently a potential hazard. Until the ACM is removed, access to the boiler area should be restricted and the site should be labeled as described in Section 5.1.



Photograph 72: Hangar Boiler Building



Photograph 75: Hangar



Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ⊕ -TSI
- ⬡ -Misc



0 20 40 80



SCALE IN FEET

Site 75 Hangar Floor Plan

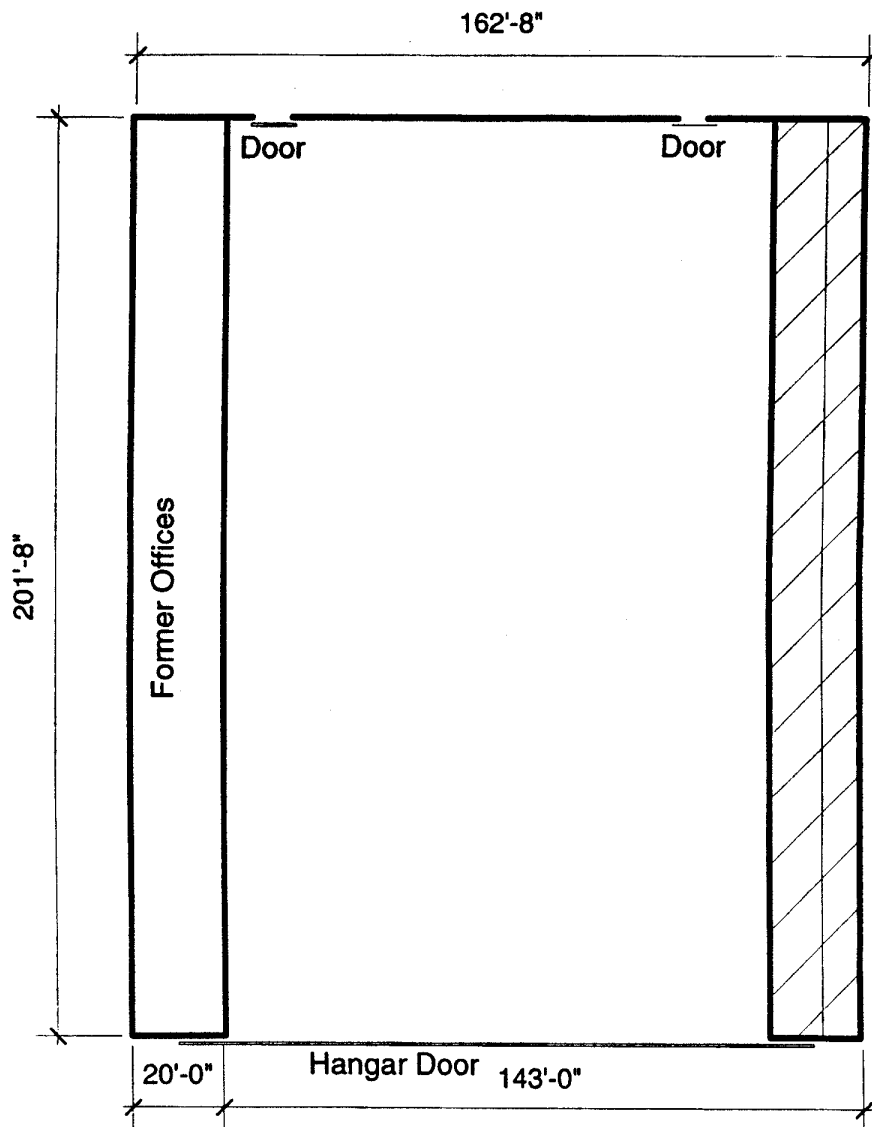


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& ABATEMENT PLAN

Figure 75-1

Asbestos Sample Locations

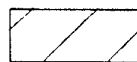


Recommendations:
 Remove entire pipe network.
 Remove floor and ceiling tiles.
 Remove interior transite wall board.
 Remove and replace exterior transite
 and weather stripping.

————— Transite Materials



Ceiling Tiles



Floor Tiles



0 20 40 80



SCALE IN FEET

Site 75 Hangar Floor Plan



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 ASBESTOS INVENTORY
 & ABATEMENT PLAN**

Figure 75-2

Asbestos Abatement Plan

4.24 Site 77 Pacific Northern/Western Airlines (PNA/WA) Terminal**Description**

The PNA/WA airline terminal was a 40-foot x 100-foot, single story, wood-frame building. The building had a garage (at the eastern part) and a former combined passenger lounge and food service and ticketing area. The terminal building was destroyed by fire (see photograph 77).

Suspect Materials

Due to the condition of the building, samples were taken from the various debris piles around the site. Ten samples of nine suspect ACMs were collected. Materials included roofing materials, fiberglass awning, ceiling tiles, insulation, gypsum wallboard, cove base, painted hardboard, and two different types of floor tiles and mastic. Refer to the ACM Data Tables in Appendix B for descriptions of the material sampled and analytical information. See Figure 77-1 for sample locations.

Asbestos-Containing Materials

- Floor tile mounted on plywood contains chrysotile asbestos
- Floor tile and mastic with plywood and tar-paper backing contains chrysotile asbestos

Summary of ACM Quantities

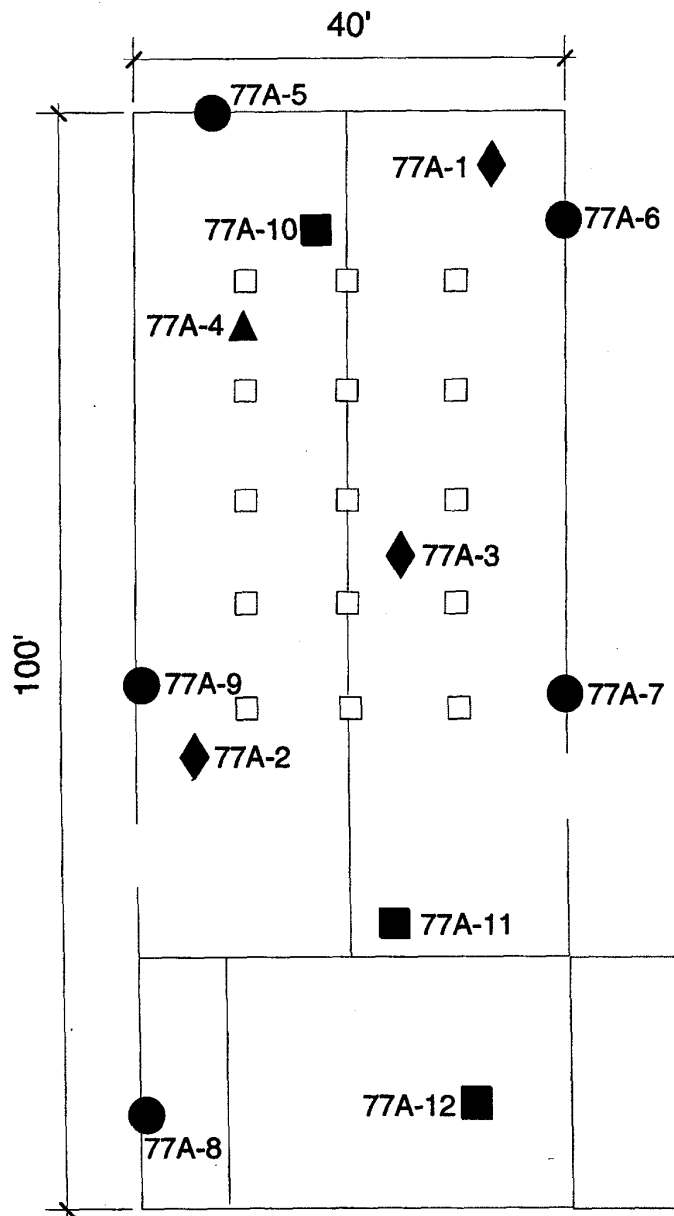
Sample No.	Location	Material Description	Quantity	Unit
77A-9	Debris	12"x12" floor tile mounted on plywood	2,400	SF
77A-11	Debris	Floor tile and mastic with plywood	800	SF

Recommendations

All ACM debris needs to be cleaned up and disposed of according to recommended procedures as described in Section 5.1.



Photograph 77: PNA/WA Terminal



Sample Types

- ▲ -Ceiling
- -Floor
- -Wall
- ◆ -Roof
- ⊙ -TSI
- ◈ -Misc



0 5 10 20
SCALE IN FEET

Site 77 PNA Terminal
Floor Plan



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& ABATEMENT PLAN

Figure 77-1

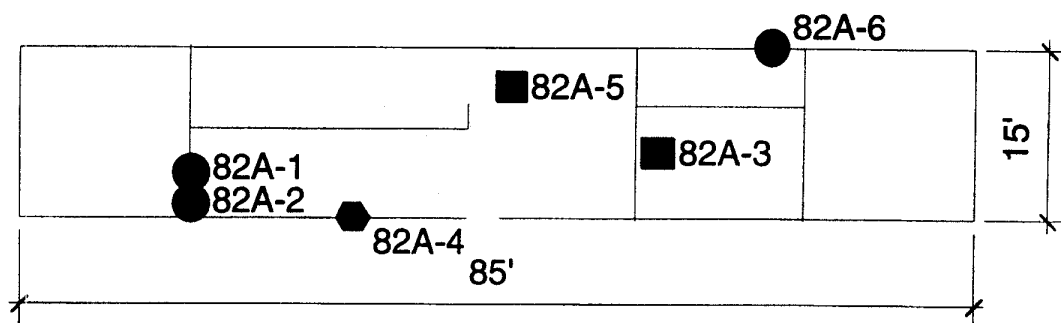
Asbestos Sample Locations



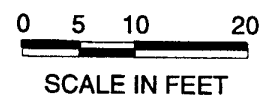
Photograph 80: Localizer



Photograph 82a: Winnipeg Garrison/Annette Inn



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
◐	-TSI
◑	-Misc



Site 82 Winnipeg Garrison/Annette Inn
Apartments Floor Plan

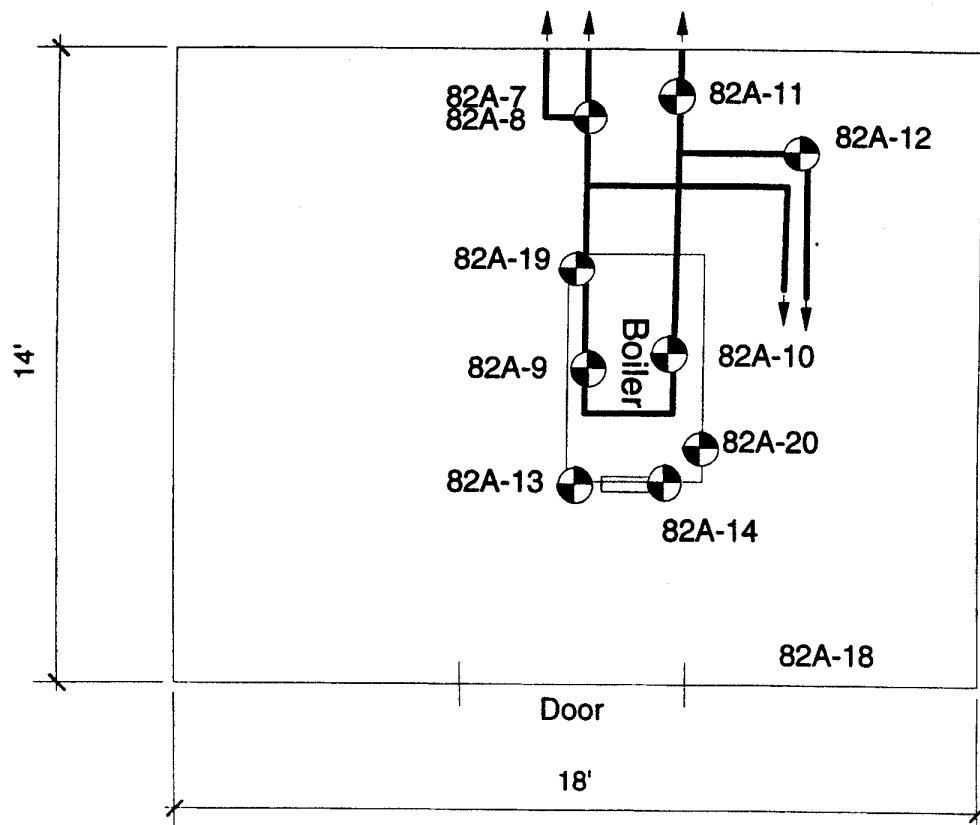


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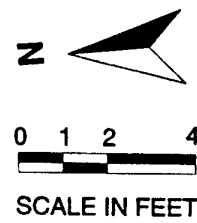
**METLAKATLA PENINSULA
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Figure 82-1

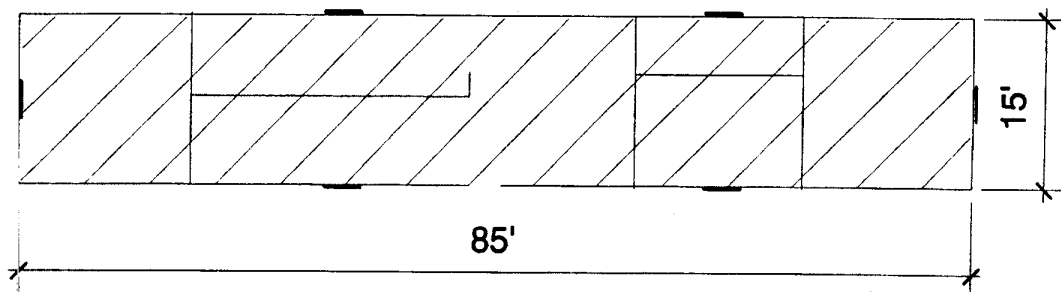
Asbestos Sample Locations



Sample Types	
▲	-Ceiling
■	-Floor
●	-Wall
◆	-Roof
◐	-TSI
◑	-Misc



Site 82 Winnipeg Garrison/Annette Inn
Boiler Building



Recommendations:
Remove floor tiles and window caulking.



0 5 10 20
SCALE IN FEET

Site 82 Winnipeg Garrison/Annette Inn
Apartments Floor Plan

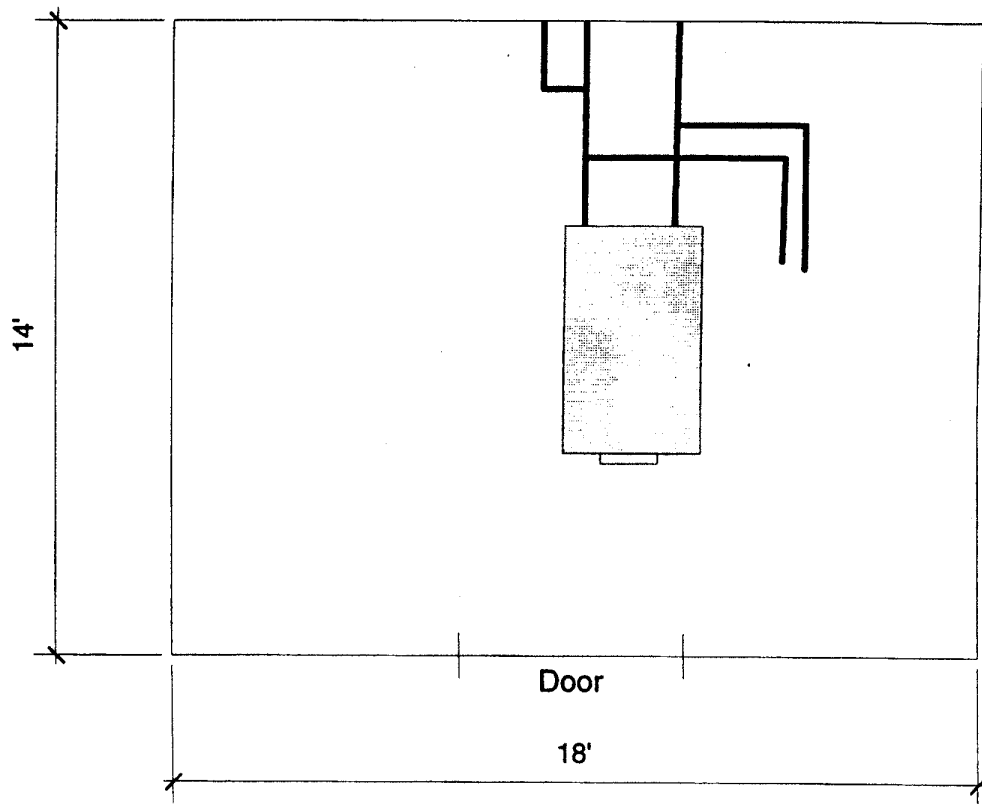


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& ABATEMENT PLAN**

Figure 82-3

Asbestos Abatement Plan



Boiler Insulation

Pipe Network

Recommendations:

Remove entire pipe network.

Remove boiler insulation and gasket.



0 1 2 4
SCALE IN FEET

Site 82 Winnipeg Garrison/Annette Inn
Boiler Building

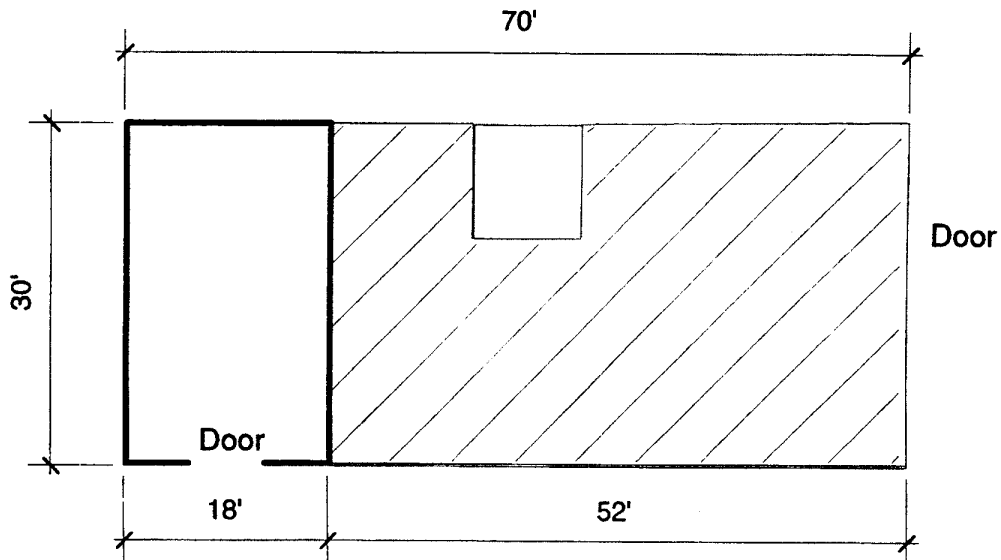


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& ABATEMENT PLAN**

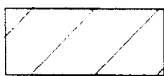
Figure 82-4

Asbestos Abatement Plan



Recommendations:
 Remove transite wall board.
 Remove floor tiles and mastic.

— Transite Wall Board

 Floor Tile and Mastic



0 5 10 20
 SCALE IN FEET

Site 85 Tropospheric Relay Station
 Floor Plan



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 ASBESTOS INVENTORY
 & ABATEMENT PLAN**

Figure 85-2

Asbestos Abatement Plan

5.0 SCOPE, COST, AND SCHEDULE FOR ABATEMENT**5.1 Scope of the Work**

The recommended work requires the disturbance, demolition, removal, and disposal of the ACMs as described in Section 4. Recommended plans for each site are based on the class of work to be performed as defined in OSHA Standard 1926.1101 Subpart Z. An overview of the classes of work and provisions to accomplish them are given in Table 1 (OSHA, 1995). Table 2 gives an overview of the type of work recommended at each site by class.

Definitions and abbreviations pertaining to asbestos removal and disposal are provided in Appendix A (Glossary). Regulations, codes and standards, and guidance materials are listed in Appendix C (Applicable Regulations). All asbestos work will be performed in compliance with OSHA Standard 1926.1101 Subpart Z and the Uniform Fire Code. The OSHA regulations addressing abatement procedures are provided in Appendix D (Abatement Procedures).

Asbestos abatement work can be very site specific. Circumstances and site conditions often dictate methods and procedures necessary to perform a safe and quality job. The following general procedures are recommended as a supplement to the regulations for specific elements of the asbestos abatement work on the Metlakatla Peninsula.

Removal of debris piles:

Non-ACM will be sorted out of debris piles and the remaining materials will be disposed of as ACM. Where sorting is unsafe or impractical, the debris pile will be disposed as ACM.

Removal of scattered debris:

At sites where scattered ACM debris has been identified, reasonable efforts will be made to canvas the surrounding area to look for, pick up, and dispose of all identified pieces of ACM. An area that extends out and around at a distance of 25 feet from the assumed original location of the ACM should be searched for visible ACM.

Potential release areas:

In areas where friable asbestos is exposed and or damaged, actions will be taken to communicate the potential hazards to the public. Access to the area will be restricted with hazard warning tape. Warning signs will be posted at all regulated areas. The required sign information is:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

Table 1. Provisions required to accomplish asbestos abatement by class of work.

Definition	Class I	Class II	Class III	Class IV
	Removal of thermal system insulation (TSI) and surfacing materials (SM)	Removal of all other asbestos not TSI or SM	Maintenance and repair operations disturbing asbestos-containing materials	Housekeeping and custodial operations (including construction site cleanup)
Regulated Areas	Required (signs required)	Required (signs required)	Required (signs required)	Required (signs required)
Competent Person	Required on site: • inspect each workshift • contractor and supervisor training required	Required on site: • inspect often • contractor and supervisor training required	Required on site: • inspect often • contractor and supervisor training required	Required on site: • inspect often • operations and maintenance training required
Air Monitoring	• Initial if no negative exposure assessment (NEA) • Daily if no NEA • Terminate if < permissible exposure limit (PEL) • Additional if conditions change	• Initial if no NEA • Daily if no NEA • Terminate if < PEL • Additional if conditions change	• Initial if no NEA • Periodic to accurately predict if > PEL • Terminate if < PEL • Additional if conditions change	not applicable
Medical Surveillance	Required if: • wearing negative-pressure respirator • > PEL • > 30 days exposure/year	Required if: • wearing negative-pressure respirator • > PEL • > 30 days exposure/year	Required if: • wearing negative-pressure respirator • > PEL • > 30 days exposure/year	Required if: • wearing negative-pressure respirator • > PEL
Respirators	Mandatory for all Class I jobs	Mandatory if: • non-intact removal • no NEA • > PEL • dry removal (except for roofing) • in emergencies	Half-mask air-purifying respirator minimum if: • no NEA • TSI or SM disturbed • > PEL Mandatory if: • dry removal (except for roofing) • in emergencies	Mandatory: • in regulated area where required • if > PEL • in emergencies
Protective Clothing and Equipment	Required for all jobs if: • > 25 linear or 10 square feet of TSI or SM removal • no NEA • > PEL	Required for all jobs if: • no NEA • > PEL	Required for all jobs if: • no NEA • > PEL	Required for all jobs if: • no NEA • > PEL

Table 1. Provisions required to accomplish asbestos abatement by class of work. (continued)

Controls and Work Practices (continued)	Class I	Class II	Class III	Class IV
		<p>For removal of built-up roofing materials or asbestos-cement shingles:</p> <ul style="list-style-type: none"> • intact removal, if possible • wet methods, if feasible • cutting machine misting • HEPA-vacuum debris • lower by day's end • control dust of unbaggd material • roof vent system protected <p>For removal of cementitious siding, shingles, or transit panels:</p> <ul style="list-style-type: none"> • intact removal, if possible • wet methods • lower via dust-tight chute by day's end • cut nail heads <p>For removal of gaskets:</p> <ul style="list-style-type: none"> • use glove bags if not intact • wet removal • prompt disposal • wet scraping <p>Additional requirements:</p> <ul style="list-style-type: none"> • wet methods • intact removal, if possible • cutting, abrading, or breaking prohibited 		

Table 2. Summary of asbestos abatement work for each site by class.

Class of Work	Class I		Class II					Class III			Other	
	Remove	Remove & Replace	Remove	Remove & Replace	Debris Pile	Scattered Debris	Encapsulation	Inspect & Repair	O&M Plan	Hazard Warn.	No Action	
Site Name & Number												
7 BIA Road Maintenance Center											X	
14 Chlorination Building		X										
15 White Alice Station		X		X			X	X	X			
20 Weather Bureau Housing(occupied)												
20 Weather Bureau Housing(condm'd)			X									
21 Remote Control Air Ground Station											NA	
22 AAC'S Station					X	X						
24 Middle Marker Facility			X									
27 VORTAC Facility											NA	
36 Glide Slope Facility			X									
44 USCG Housing			X			X						
46 USCG Fire Station/Post Exchange					X	X						
48 Main Construction Camp											X	
50 Fire Truck Hut	X			X						X		
53 FAA Housing Area (occupied)												
53 FAA Housing Area (unoccupied)	X		X							X		
54 Former Public School	X				X	X				X		
56 PNA/WA Apartments				X								
63 Remote Receiver Station			X									
67 Weather Bureau Station			X									
68 USCG Water Treatment Plant			X									
69 USCG Quarters	X		X		X							
71 USCG Garage			X	X								
72 Hangar Boiler Building	X									X		
75 Hangar	X		X	X				X	X	X		
77 PNA/WA Terminal					X	X						
80 Localizer			X									
82 Winnipeg Garrison/Annette Inn	X		X							X		
85 Tropospheric Relay Station			X									

O&M - Operations and maintenance

NA - Not accessible

5.2 Probable Cost Estimate

Cost estimates were determined by estimating quantities in the field and outlining the work required for each type of material. This was done on a site-by-site basis. All site elements were then accumulated and contingency, area factors, mobilization, waste handling, and waste disposal were calculated for the entire project. Costs were broken down into Class I, II, and III work, which incorporate different work practices and levels of *personal protection*. These were then codified for each site to cover all materials and classes of materials encountered. Basic costs were taken from Means Construction Cost Data tables for 1997 and Environmental Cost Handling Options and Solutions (ECHOS) cost data tables for 1995.

Waste disposal assumes that all ACM will be disposed of off island at a controlled landfill. Disposal would entail the use of overseas container boxes similar to the garbage transfer boxes currently used for the City of Ketchikan (or equivalent). These costs assume an ability to off load at Metlakatla and that the supporting infrastructure of docks, roads, and lifting capacity will be available. See Table 3 for a site-by-site summary of estimated costs and waste volumes.

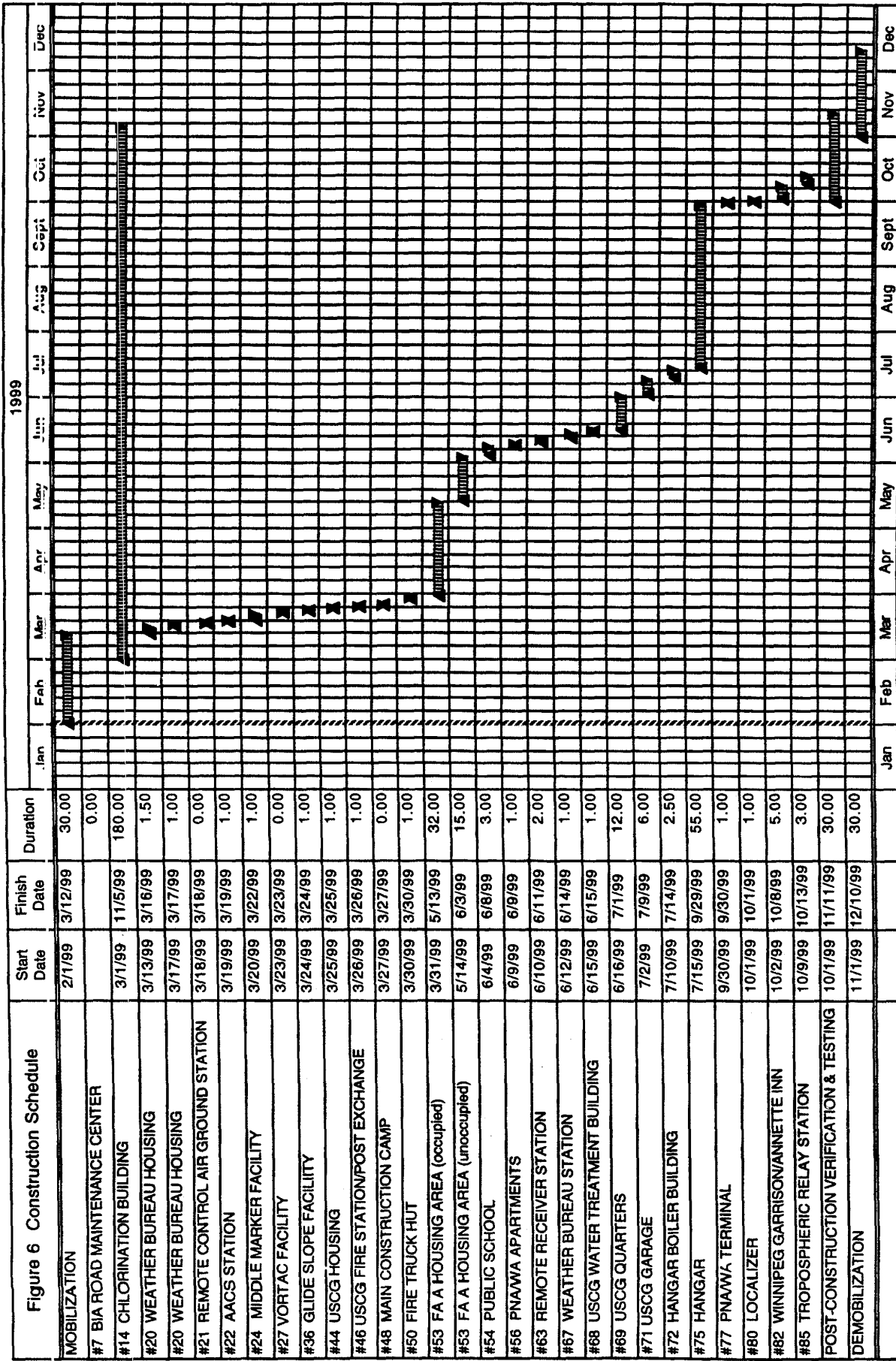
5.3 Construction Schedule

The estimated time to conduct the asbestos abatement at all of the sites in the project area is 1 year. A probable schedule is shown on Figure 6. This schedule assumes that the work is conducted as two coincident construction projects (water line as a separate project) by a crew of eight workers, including one supervisor.

Table 3. Probable cost estimates for asbestos abatement.

Site	Cost	Waste (CF)
7 BIA Road Maintenance Center	\$0	0
14 Chlorination Building	\$1,462,000	27,000
15 White Alice Station	\$126,000	1,086
20 Weather Bureau Housing (occupied)	\$1,000	0
20 Weather Bureau Housing (unoccupied)	\$15,000	625
21 Remote Control Air Ground	\$0	0
22 AACS Station	\$4,000	300
24 Middle Marker Facility	\$1,000	24
27 VORTAC Facility	\$0	0
36 Glide Slope Facility	\$600	16
44 USCG Housing	\$37,000	2,000
46 USCG Fire Station/Post Exchange	\$34,000	6,500
48 Main Construction Camp	\$0	0
50 Fire Truck Hut	\$5,000	60
53 FAA Housing Area (occupied)	\$312,000	9,132
53 FAA Housing Area (unoccupied)	\$220,000	11,845
54 Public School	\$47,000	8,204
56 PNA/WA Apartments	\$4,000	114
63 Remote Receiver Station	\$9,000	314
67 Weather Bureau Station	\$1,000	48
68 USCG Water Treatment Plant	\$10,000	600
69 USCG Quarters	\$382,000	17,950
71 USCG Garage	\$27,000	1,033
72 Hangar Boiler Building	\$17,000	206
75 Hangar	\$498,000	17,470
77 PNA/WA Terminal	\$11,000	1,600
80 Localizer	\$2,000	106
82 Winnipeg Garrison/Annette Inn	\$20,000	1,370
85 Tropospheric Relay Station	\$19,000	743
Site Sub Total	\$3,265,000	108,346
Waste Container Handling	\$171,000	
Mobilization @ 15%	\$515,000	
Contingencies @ 15%	\$593,000	
Subtotal	\$4,544,000	
Escalated by 1.35 for Alaska	\$6,134,000	
Container Barging	\$213,000	
Disposal in Landfill	\$390,000	
Asbestos Project Total	\$6,740,000	108,346

CF - Cubic feet



6.0 SUMMARY AND RECOMMENDATIONS

6.1 O&M of In-Place Materials

An *operations & management (O&M)* program incorporating proper training should be implemented for in-place ACM. The objective of an O&M program is to minimize the exposure of building occupants to asbestos fibers. As a result of eventual repair or remodeling, the in-place ACM may be disturbed or removed. For this reason, *personal protective equipment* and properly trained personnel must be used to conduct O&M of ACM. Alterations to or removal of ACM requires adherence to all applicable federal regulations concerning the removal and disposal of asbestos-containing materials.

The O&M program should include the following seven elements and address all types of ACM.

- Notification of workers, tenants, and building occupants of ACM locations and how and why to avoid disturbing ACM.
- Regular inspection to assess and document any changes in ACM condition.
- Work control/permit system to control activities that might disturb ACM.
- Special set of work practices to ensure adequate protection of staff from asbestos exposure. Four categories of work practices:
 1. Worker protection programs
 2. Procedures for performing routine maintenance activities involving ACM
 3. Special cleaning techniques for asbestos fibers
 4. Procedures for asbestos fiber release episodes
- *Recordkeeping*: All asbestos management documents should be stored in permanent files. These files should include inspection and assessment reports, an O&M program plan, descriptions of work practices, a respirator plan, reports on the reinspection of ACM, and any records required by the EPA and OSHA.
- Worker protection program, including respiratory and protective clothing program, *medical surveillance*, and personal exposure monitoring.
- Training is the cornerstone of a successful O&M program. With proper training, custodial and maintenance staff can successfully deal with ACM left in place. OSHA and EPA require a worker training program for all employees exposed to fiber levels at or above an action level of 0.1 f/cc TWA. The three levels of training are:

Level 1 awareness training for workers involved in activities where ACM may be accidentally disturbed. Training may range from 2 to 8 hours in duration.

Level 2 special O&M training for maintenance workers involved in general maintenance and incidental ACM repair tasks; at least 16 hours in duration.

Level 3 abatement worker training for workers who may conduct asbestos abatement. This work involves direct, intentional contact with ACM. Abatement worker training courses involve 24 to 32 hours of training.

6.2 Management of Asbestos Abatement Work

6.2.1 Notification

Each owner or operator of a demolition or renovation activity shall notify the EPA administrator with written notice of intent to demolish or renovate. Notification must be made 10 working days before the activity begins. Notification requirements for asbestos abatement work are covered under Federal Register Part III: Environmental Protection Agency 40 CFR Part 61, "National Emission Standards for Hazardous Air Pollutants; Asbestos NEHSAP Revision; Final Rule", issued Tuesday, November 20, 1990. Notices must be updated as necessary when the amount of asbestos affected changes by 20 percent.

The following is a brief outline of information needed on the notification form (see regulation for complete description):

- An indication of whether the notice is the original or a revised notification
- Name, address, and telephone number of both the facility owner and operator and the asbestos removal contractor owner or operator
- Type of operation: demolition or renovation
- Description of the facility or affected part of the facility including the size (square meters [square feet] and number of floors), age, and present and prior uses of the facility
- Procedure, including analytical methods, employed to detect the presence of RACM and Category I and Category II non-friable ACM
- Estimate of the approximate amount of RACM to be removed from the facility
- Location and street address (including building number or name and floor or room number, if appropriate), city, county, and state of the facility being demolished or renovated
- Scheduled starting and completion dates of asbestos removal work
- Scheduled starting and completion dates of demolition or renovation
- Description of planned demolition or renovation work to be performed and method(s) to be employed
- Description of work practices and engineering controls to be used, including asbestos removal and waste-handling emission control procedures
- Name and location of the waste disposal site where the asbestos-containing waste material will be deposited
- A certification that at least one person was trained as required
- Description of procedures to be followed in the event that unexpected RACM is found or Category II non-friable ACM becomes crumbled, pulverized, or reduced to powder
- Name, address, and telephone number of the waste transporter

The Uniform Fire Code also has notification requirements. The local Fire Marshal should be notified 24 hours prior to the commencement and closure of asbestos removal operations.

Most EPA-approved asbestos disposal facilities also require notification prior to disposal. An acceptable disposal facility for asbestos wastes must adhere to EPA requirements for no *visible emissions* to air during disposal.

6.2.2 Conducting Abatement Projects

Key elements of the abatement project include comprehensive and precise contract specifications, workers specially trained in asbestos abatement, rigorously applied worker protection and site containment measures, and regular monitoring of the work site. When

abatement activity is complete, the entire work site should be thoroughly cleaned. The contractor should be released only after the work site has passed visual inspection and a test for airborne asbestos.

A contractor is usually hired to conduct abatement work that goes beyond special O&M. Steps in selecting a contractor include checking references, conducting interviews, reviewing insurance coverage, and writing precise contract specifications. Note that the most cost-effective contractor is not necessarily the lowest bidder.

As in all construction jobs, the program manager or the manager's representative (frequently the technical advisor) should visit the abatement work site often to ensure that all plans and procedures are properly implemented. The work site monitor should:

- Be sure the workers follow specifications
- Confirm compliance with worker protection requirements
- Assure that containment barriers around the work site are properly constructed and maintained

By carefully monitoring the abatement work, the asbestos program manager can correct errors quickly. Work site inspections greatly increase an abatement project's likelihood of success. The importance of doing the job right the first time cannot be over-emphasized.

An asbestos abatement project is successful when the source of fiber release has been controlled and airborne asbestos generated during abatement has been reduced to an acceptable level. When the abatement project is completed, the entire site should be cleaned at least twice. Success is confirmed through a final evaluation at each work area. The evaluation consists of visual inspection and clearance air testing. Visual inspection is used to determine if the work has been performed properly and to check for debris and other obvious signs of poor cleaning. Air testing helps confirm that the work site has been adequately cleaned. Only then is the contractor released.

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RIDOLFI ENGINEERS

Metlakatla Peninsula Asbestos Inventory
June 30, 1998

APPENDIX A
GLOSSARY

GLOSSARY

ACBM	Asbestos-containing building material
ACM	Asbestos-containing material; any material containing more than 1% asbestos.
Adequately Wetted	Sufficiently mixed or coated with water to prevent dust emissions.
Aggressive Sampling	Air sampling that takes place after final cleanup while the air is being physically agitated to produce a "worst case" situation.
ASHERA	Asbestos Hazard Emergency Response Act
Air Monitoring	The process of measuring the airborne fiber concentration of a specific quantity of air over a given amount of time.
Amended Water	Water to which a <i>surfactant</i> (wetting agent) has been added to increase the ability of liquid to penetrate ACM.
Amosite	Natural state of the serpentine variety of chrysotile asbestos.
ANSI	American National Standards Institute
Approved Landfill	A site for the disposal of asbestos-containing and other hazardous wastes that has been given EPA approval.
Asbestos	A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos includes the asbestiform varieties of chrysotile (serpentine); <i>crocidolite</i> (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; and actinolite.
Asbestos Abatement	Procedures to control fiber release from asbestos-containing materials in buildings.
Cementitious	Friable materials that are densely packed and non-fibrous.
Chrysotile (white asbestos)	The only asbestiform mineral of the serpentine variety that contains approximately 40% each of silica and magnesium oxide. It is the most common form of asbestos used in buildings.
Clean Area	The first stage of the <i>decontamination enclosure system</i> in which workers prepare to enter the work areas.
Competent Person	In addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure; who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); for

Class I and Class II work, who is specially trained through a training course that meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisors, or its equivalent; and for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).

Crocidolite	Asbestiform variety of amphibole group; also referred to as "blue asbestos."
Decontamination Enclosure System	A series of connected rooms with <i>polyethylene</i> curtained doorways for the purpose of preventing contamination of areas adjacent to the work area.
DOD	United States Department of Defense
Encapsulant (sealant)	A substance applied to asbestos-containing material that controls the release of airborne asbestos fibers.
Encapsulation	The coating of asbestos-containing material with a bonding or sealing agent to prevent the release of airborne fibers.
EPA	Environmental Protection Agency
EPA Regulations	Regulatory standards that cover emissions into the outside environment from a workplace and disposal of hazardous wastes from job sites.
F/CC	Fibers per cubic centimeters of air
FAA	Federal Aviation Administration
Friable Asbestos	Any material that contains more than 1% asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure.
HEPA	High efficiency particulate air (air filter)
HEPA Filtered Vacuum	A high efficiency particulate air (HEPA) filtered vacuum capable of trapping and retaining 99.97% of all particles larger than 0.3 microns.
Homogeneous	Evenly mixed and similar in appearance and texture throughout.
Industrial Hygienist	A professional qualified by education, training, and experience to recognize, evaluate, and develop controls for occupational health hazards.
Logbook	An official record of all activities that occurred during a removal project.

Medical History	A record of a person's past health record, including all the hazardous materials that they have been exposed to and also any injuries or illnesses that might dictate their future health status.
Medical Surveillance	Employers must provide a medical surveillance program for all employees: 1) Who for a combined total of 30 or more days per year engage in <i>Class I, II, or III</i> work or are exposed at or above the PEL or STEL; or 2) Who wear <i>negative-pressure</i> respirators.
Mil	Prefix meaning one-thousandth
Millimeter	One-thousandth of a meter
Mineral Wool	A commonly used substitute for asbestos
MSDA	Material Safety Data Sheet
NEA	Negative Initial Exposure Assessment means a demonstration by the employer, which complies with the criteria in paragraph (f)(2)(iii) of OSHA Standard 1926.1101 Subpart Z, that employee exposure during an operation is expected to be consistently below the PELs.
Negative Pressure	An atmosphere created in a work area enclosure such that airborne fibers will tend to be drawn through the filtration system rather than leak out into the surrounding areas. The air pressure inside the work area is less than that outside the work area.
NESHAP	National Emission Standards for Hazardous Air Pollutants--EPA Regulation 40 CFR subpart M, part 61.
Operations and Maintenance Plan (O&M)	Specific procedures and practices developed for the interim control of asbestos-containing materials in buildings until it is removed.
OSHA	The Occupational Safety and Health Administration, which was created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in the workplace environment.
PEL	Permissible Exposure Limit as stated by OSHA
Personal Protective Equipment (PPE)	Any material or device worn to protect a worker from exposure to, or contact with, any harmful material or force.
Personal Sample	An air sample taken with the sampling pump directly attached to the worker with the collecting filter placed in the worker's breathing zone.
Personnel Protection	Notification and instruction of all workers prior to the beginning of a project as to the hazards associated with the job and what they can do to protect themselves from those hazards.

Phase Contrast Microscopy (PCM)	An optical microscopic technique used for counting fibers in air samples, but which does not distinguish fiber types.
Polarized Light Microscopy (PLM)	An optical microscopic technique used to distinguish between different types of asbestos fibers by their shape and unique optical properties.
Polyethylene	Plastic sheeting that is often used to seal off an area in which asbestos removal is taking place for the purpose of preventing contamination of other areas.
Posting	Refers to caution or warning signs that should be posted in any area in which asbestos removal is taking place or where airborne fiber levels may present a health hazard.
Protective Clothing	Protective, lightweight garments worn by workers performing asbestos abatement to keep gross contamination off the body.
QA/QC	Quality assurance/quality control
Random Sample	A sample drawn in such a way that there is no set pattern; designed to give a true representation of the entire population or area.
Recordkeeping	Detailed documentation of all program activities, decisions, analyses, and any other information pertinent to a project.
SM	Surfacing material
STEL	Short term exposure limit
Substrate	The material or existing surface located under or behind the asbestos-containing material.
Surfactant	A chemical wetting agent added to water to improve its ability to penetrate into asbestos-containing materials.
Tremolite	Asbestiform mineral of the amphibole group.
Transmission Electron Microscopy (TEM)	A method of microscopic analysis that utilizes an electron beam focused onto a thin sample. As the beam penetrates (transmits) through the sample, the difference in densities produces an image on a fluorescent screen, from which samples can be identified and counted.
TSI	Thermal system insulation
TWA	Time-weighted average, as in air sampling
USCG	United States Coast Guard

Visible Emissions

Airborne fibers given off from an asbestos-containing source that are visible to the human eye.

Visual Inspection

A walk-through type inspection of the work area to detect incomplete work, damage, or inadequate cleanup of a worksite.

Wet Cleaning

The process of eliminating asbestos contamination from surfaces and objects by using cloths, mops, or other cleaning tools that have been dampened with water.

RIDOLFI ENGINEERS

Metlakatla Peninsula Asbestos Inventory
June 30, 1998

APPENDIX B
DATA TABLES

DATA TABLE Header Descriptions	
A.	Site Number - is a unique number specific to sites assessed in the peninsula project area.
B.	Sample Number - is a unique number identifying each sample taken.
C.	Lab Number - is a unique number assigned by the laboratory that corresponds to the sample number.
D.	Functional Space - Space or area used to differentiate various materials and quantities.
E.	Hmat Number - An inventory number assigned to each homogeneous material. A homogenous material comprises an area containing a suspect material that is uniform in texture and color and appears identical in every other respect.
F.	Percent Asbestos - reflects the total percentage of all forms of asbestos minerals contained in the sample.
G.	Asbestos Type - indicates the specific type of asbestos which is identified in the sample: CHRY or CH = chrysotile, AMO or AM = amosite, CROC or CR = crocidolite, ANTH or AN = anthophyllite, TREM or TR = tremolite, ACT or AC = actinolite
H.	Friable - is defined as a material that may be crumbled or reduced to powder by hand pressure.
I.	Potential for Disturbance - indicates the likelihood of ACM being disturbed in the future, related to: The frequency of contact between the ACM and human activity; the location of ACM with respect to vibration sources; and the potential for air erosion. Three categories exist under AHERA: 1) "Potential for Significant Damage" (PotSigDam), 2) "Potential for Damage" (PotDam), 3) "Low Potential" (LowPot)
J.	Disturbance Source - reflects the type of condition or action that might disturb the ACM. Under AHERA, four types of disturbance exist: 1) physical contact with material (C), 2) vibration influence (V), 3) air erosion (A), and 4) water erosion and/or influence (W)
K.	Condition - is a description of the physical condition of the ACM based on a visual inspection. AHERA defines three categories: 1) "Good Condition" (Good), 2) "Damaged" (Dam), and 3) "Significantly Damaged" (SigDam)
L.	Hazard Ranking - A score of "1" indicates a significant hazard, while a score of "7" indicates a low hazard. The AHERA ranking system evaluates material on the basis of its condition and potential for disturbance. AHERA addresses only friable material; the presence of non-friable ACM is documented, but is not assessed. Non-friable ACM is included in the Hazard ranking done here. AHERA also categorizes on the basis of material type (surfacing, TSI, or miscellaneous).
M.	Approximate Quantity - is the total estimated quantity of ACM of that type in the room.
N.	Building - functional description as listed for each site.
O.	Room Description - is the type or name of the room, usually based on use.
P.	Material Description - is the type of building material inspected and assessed.
Q.	Material Type: TSI-Thermal System Insulation, Misc-Miscellaneous Building Material, Surfacing-Trowel- or spray-applied surfacing materials.
R.	Sample Location - reflects the specific building component on which suspect material is found: F = Floor, W = Wall, C = Ceiling, R = Roof, M = Miscellaneous
S.	Date Sampled - date sample was taken on site.
T.	Reference Sample - Multiple samples of the same material often vary in asbestos content. This may be a reflection of manufacturing inconsistencies and/or mixing of materials such as mastics or spray-on insulation prior to application. For the purpose of discussion, one sample is chosen to represent the asbestos content of the suspect material. This is termed the reference sample.
U.	Related Samples - samples, other than the reference sample, collected of the same suspect material.

Site Number	Sample Number	Lab Number	Functional Space	Percent Adherence	Adherence Type	Feasible	Estimated for Disinfection Source	Condition	Handed Sampling	Approximate Quantity	Building Description	Room Description	Material Description	Material Type	Sample Location	Date Sampled	Reference Sample	Related Samples
7	7A.1	9700418	1	NONE	NONE	no	no	no	4	641 sq ft	Road Main	Building #1	Insulation Beating w/ Roll	Misc	Bldg 1 Wall	8/12/97	-	7A.2
	7A.2	9700419	1	NONE	NONE	no	no	no	4	641 sq ft	Road Main	Building #1	Insulation Beating w/ Roll	Misc	Bldg 1 Wall	8/12/97	-	7A.3
	7A.3	9700420	2	NONE	NONE	no	no	no	4	334 sq ft	Road Main	Old Office Tilt	Ceiling Tile, wood/paper Brown and	Misc	Ceiling	8/12/97	-	7A.4
	7A.4	9700421	2	NONE	NONE	no	no	no	4	334 sq ft	Road Main	Old Office Tilt	Ceiling Tile, wood/paper Brown and	Misc	Ceiling	8/12/97	-	7A.5
	7A.5	9700422	4	NONE	NONE	no	no	no	4	552 sq ft	Road Main	New Office Tilt	Seal & Asphalt Building Material	Misc	Bldg 1 Road	8/12/97	-	
14	14A.01	9700710	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.03
	14A.02	9700711	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.04
	14A.03	9700712	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.05
	14A.04	9700713	2	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.06
	14A.05	9700714	2	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.07
	14A.06	9700715	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.08
	14A.07	9700716	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.09
	14A.08	9700717	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.10
	14A.09	9700718	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.11
	14A.10	9700719	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.12
	14A.11	9700720	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.13
	14A.12	9700721	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.14
	14A.13	9700722	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.15
	14A.14	9700723	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.16
	14A.15	9700724	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.17
	14A.16	9700725	1	NONE	NONE	no	no	no	7	37	Chorination	Equipment Room	Black Epoxy Material/Green Paint	TS	Base Water Line	7/10/97	-	02.18
15	15A.01	9700831	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.08	15A.09
	15A.02	9700832	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.10	15A.11
	15A.03	9700833	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.12	15A.13
	15A.04	9700834	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.14	15A.15
	15A.05	9700835	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.16	15A.17
	15A.06	9700836	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.18	15A.19
	15A.07	9700837	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.20	15A.21
	15A.08	9700838	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.22	15A.23
	15A.09	9700839	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.24	15A.25
	15A.10	9700840	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.26	15A.27
	15A.11	9700841	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.28	15A.29
	15A.12	9700842	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.30	15A.31
	15A.13	9700843	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.32	15A.33
	15A.14	9700844	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.34	15A.35
	15A.15	9700845	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.36	15A.37
	15A.16	9700846	0	NONE	NONE	no	no	no	3	1300 sq ft	MPRL W.A.S.	Exterior Walls	Exterior Concrete Wall Surfacing Material	Surf	Exterior Walls	7/10/97	15A.38	15A.39

Site Number	Sample Number	Lab Number	Percent Adhesive	Adhesive Type	Fracture	Condition	Plaster	Approximate	Building	Room	Material	Sample Number	Reference
Number	Number	Number	Number	Type	Surface	Ranking	Thickness	Quantity	Description	Description	Type	Number	Number
20	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
	15A-17	9707060	6	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	15A-17	15A-17
21	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
	20A-1	9707071	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	20A-1	20A-1
22	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
	21A-1	9707083	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	21A-1	21A-1
23	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
	22A-1	9707085	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	22A-1	22A-1
24	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
	23A-1	9707087	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	23A-1	23A-1
25	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
	24A-1	9707089	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	24A-1	24A-1
26	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1
	25A-1	9707091	1	NONE	Low Pot	C	Good	7	APPL W.A.S.	Downstairs	6" Insulation, Batt, 2x4 Ceiling	25A-1	25A-1

ACM Data Tables

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ACM Data Tables

Sl#	Sample Number	Lab Number	Functional Space	Room Number	Percent Asbestos	Asbestos Type	Findable	Potential for Disturbance	Disturbance Source	Credibility	Hazard Ranking	Approximate Quantity	Building	Room Description	Material Description	Material Type	Sample Location	Date Sampled	Reference Sample	
6	6A-1	9707074	1	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Boiler feed	7/20/97	
	6A-1B	9708063	1	1	35%/25%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Domestic Cold Water	8/6/97	
	6A-1C	9708064	1	1	35%/25%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Domestic Cold Water	8/6/97	
	6A-2	9708055	1	1	15%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3	9708061	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Boiler feed	7/20/97	
	6A-3B	9708062	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3C	9708063	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3D	9708064	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3E	9708065	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3F	9708066	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3G	9708067	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3H	9708068	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3I	9708069	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
	6A-3J	9708070	1	2	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	343 Btu/170 lb	USCG Housing	Boiler room	Pipe fittings, El and T's	Pipe fittings, El and T's	TS	Hot Water Return	8/6/97	
7	7A-1	9707079	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1B	9707080	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1C	9707081	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1D	9707082	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1E	9707083	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1F	9707084	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1G	9707085	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1H	9707086	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1I	9707087	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1J	9707088	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1K	9707089	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1L	9707090	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1M	9707091	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1N	9707092	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
7	7A-1	9707093	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1B	9707094	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1C	9707095	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1D	9707096	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1E	9707097	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1F	9707098	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1G	9707099	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1H	9707100	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1I	9707101	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1J	9707102	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1K	9707103	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1L	9707104	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1M	9707105	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	
	7A-1N	9707106	2	1	35%/10%	CHRY/AMOS	YES	PotDist/Dan	C.V.A.W	Std/Dan	1	500 sq ft	USCG Housing	Walls/ Ceilings	Insulation batts, wall to ceiling	Insulation batts, wall to ceiling	TS	Cooling Ceiling	7/20/97	

Site Number	Sample Number	Lab Project/Field	Parent	Adhesive Type	Feasible	Potential for	Dissemination Source	Condition	Hazard Ranking	Approximate Quantity	Building	Room	Material Description	Material Type	Sample Location	Date Submitted	Related Sample	
77	77A1	7707067	1	NONE	no	Dissemination	C.V.A.W	Good	1537 ft	1537 ft	Hangar	Doors & Windows	Reddy-Walker styrene composite materials	Misc.	Basement	1/20/97		
	77A2	7707068	2	30%	YES	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	2nd Floor ceiling	Acoustic ceiling tiles (2' x 1' @ 1/2" thick) and floor	Misc.	Basement	1/20/97		
	77A3	7707069	3	NONE	YES	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	No. 2000 Downer B	5' x 10' floor tiles, white grout (2nd floor)	Misc.	Basement	1/20/97		
	77A4	7707066	4	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	No. 2000 Downer B	5' x 10' floor tiles, white grout (2nd floor)	Misc.	Basement	1/20/97	
	77A5	7707066	5	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	No. 2000 Downer B	5' x 10' floor tiles, white grout (2nd floor)	Misc.	Basement	1/20/97	
	77A6	7707067	6	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	No. 2000 Downer B	5' x 10' floor tiles, white grout (2nd floor)	Misc.	Basement	1/20/97	
	77A7	7707067	7	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	No. 2000 Downer B	5' x 10' floor tiles, white grout (2nd floor)	Misc.	Basement	1/20/97	
	77A8	7707068	8	NONE	YES	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	1st floor ceiling	12' x 12' acoustic ceiling tile	Misc.	Basement	1/20/97		
	77A9	7707068	9	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A10	7707067	10	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A11	7707067	11	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A12	7707067	12	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A13	7707067	13	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A14	7707067	14	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A15	7707067	15	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	77A16	7707067	16	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
78	78A1	7707067	1	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	78A2	7707067	2	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	78A3	7707067	3	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	78A4	7707067	4	NONE	no	Dissemination	C.V.A.W	Good	400 sq ft	400 sq ft	Hangar	Stair	Stair handrail, white plastic coating tile	Misc.	Basement	1/20/97		
	78A5	7707067	5	3% / 10%	CHRYLI / L	no	Dissemination	C.V.A.W	Good	800 sq ft	800 sq ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor (Bulbless & back)	1/20/97		
	78A6	7707068	6	NONE	no	Dissemination	C.V.A.W	Good	700 sq ft	700 sq ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor	1/20/97			
	78A7	7707068	7	NONE	no	Dissemination	C.V.A.W	Good	300 ft	300 ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor	1/20/97			
	78A8	7707068	8	NONE	no	Dissemination	C.V.A.W	Good	300 sq ft	300 sq ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor	1/20/97			
	78A9	7707068	9	NONE	no	Dissemination	C.V.A.W	Good	300 sq ft	300 sq ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor	1/20/97			
	78A10	7707068	10	NONE	no	Dissemination	C.V.A.W	Good	300 sq ft	300 sq ft	Hangar	Floor tiles, mounted to plywood w/ tie paper backing	Misc.	Floor	1/20/97			
80	80A1	7707067	1	NONE	no	Dissemination	C.V.A.W	Good	1613 sq ft	1613 sq ft	Locustair Building	Electronics	Te. James Mack	Misc.	Print room (top)	8/11/97		
	80A2	7707067	2	NONE	no	Dissemination	C.V.A.W	Good	425 sq ft	425 sq ft	Locustair Building	Electronics	5' x 7' Green floor tile w/ black mastic backing	Misc.	Floor	8/11/97		
	80A3	7707067	3	30%	CHRYLI	no	Dissemination	C.V.A.W	Good	425 sq ft	425 sq ft	Locustair Building	Electronics	5' x 7' Brown floor tile w/ black mastic / tie paper backing	Misc.	Floor	8/11/97	
	80A4	7707068	4	NONE	no	Dissemination	C.V.A.W	Good	1613 sq ft	1613 sq ft	Locustair Building	Electronics	Person insulation with heavy paper backing both sides	Misc.	Subway area used to tie wall	8/11/97		
	82A1	7707068	1	NO-72	no	Dissemination	C.V.A.W	Good	317 sq ft	317 sq ft	Annette Inn	Apartment	Insulation Brown wood tile w/ tie paper backing	Misc.	Apartment	8/11/97		
	82A2	7707068	2	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	725 sq ft	725 sq ft	Annette Inn	Apartment	5' x 7' Brown floor tile w/ black mastic backing	Misc.	Apartment	8/11/97	
	82A3	7707068	3	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	600 sq ft	600 sq ft	Annette Inn	Apartment	Insulation Vinyl Green floor tile mastic tile backing	Misc.	Apartment	8/11/97	
	82A4	7707068	4	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	56 ft	56 ft	Annette Inn	Apartment	Insulation Vinyl Green floor tile mastic tile backing	Misc.	Apartment	8/11/97	
	82A5	7707068	5	10%	CHRYLI	no	Dissemination	C.V.A.W	Good	650 sq ft	650 sq ft	Annette Inn	Apartment	5' x 7' Floor tile brown / tie green mastic	Misc.	Apartment	8/11/97	
	82A16	7707078	1	NONE	no	Dissemination	C.V.A.W	Good	314 sq ft	314 sq ft	Annette Inn	Apartment	Person board (wood)	Misc.	Apartment	8/11/97		
82	82A17	7707078	2	NONE	no	Dissemination	C.V.A.W	Good	300 sq ft	300 sq ft	Annette Inn	Apartment	Applaid building tile	Misc.	Apartment	8/12/97		
	82A7	7707069	2	35% / 25%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A8	7707069	3	35% / 25%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A9	7707069	4	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A10	7707069	5	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A11	7707069	6	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A12	7707069	7	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A13	7707069	8	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A14	7707069	9	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A15	7707069	10	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A16	7707069	11	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A17	7707069	12	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A18	7707069	13	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A19	7707069	14	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A20	7707069	15	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
	82A21	7707069	16	30% / 60%	CHRYLI / ANOS	YES	Dissemination	C.V.A.W	Good	1181 / 919	1181 / 919	Annette Inn	Bolter room	Person insulation, white, chalky material	TS	Bolter room	8/11/97	
83	83A1	7707069	1	7%	CHRYLI	no	Dissemination	C.V.A.W	Good	1440 sq ft	1440 sq ft	Tropical Boley Station	Electronics	Trinitite wall board. Gray w/ insulated back like fire board	Misc.	Wall	8/11/97	
	83A2	7707069	2	35% / 10%	CHRYLI / L	no	Dissemination	C.V.A.W	Good	1530 sq ft	1530 sq ft	Tropical Boley Station	Electronics	Person floor tile, mounted on concrete	Misc.	Floor	8/11/97	
	83A3	7707069	3	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A4	7707069	4	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A5	7707069	5	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A6	7707069	6	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A7	7707069	7	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A8	7707069	8	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A9	7707069	9	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		
	83A10	7707069	10	NONE	no	Dissemination	C.V.A.W	Good	500 sq ft	500 sq ft	Tropical Boley Station	Electronics	Defect floor insulation, yellow, through	Misc.	High rise	8/11/97		

RIDOLFI ENGINEERS

Metlakatla Peninsula Asbestos Inventory
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APPENDIX C
APPLICABLE REGULATIONS

APPLICABLE REGULATIONS

- A. Title 29 CFR Part 1910
General Occupational Safety and Health Standards
 - Subpart E. Means of Egress
 - Subpart I. Personal Protective Equipment
 - Subpart Z. Toxic and Hazardous Substances
- B. Title 29 CFR Part 1926
Safety and Health Regulations for Construction
 - Subpart C. General Safety and Health Provisions
 - Subpart D. Occupational Health and Environmental Controls
 - Subpart F. Fire Protection and Prevention
 - Subpart Z. Toxic and Hazardous Substances Section 1926.1101 Asbestos
- C. Title 40 CFR Part 61
Environmental Protection Agency Hazardous Air Pollution
 - Subpart A. General Conditions
 - Subpart M. National Emission Standard for Asbestos
- D. Title 40 CFR Part 763
Environmental Protection Agency
Asbestos Model Accreditation Plan; Interim Final Rule
Issued Thursday, February 3, 1994
- E. Title 49 CFR 100-180 and 382
Department of Transportation
- F. Federal Standard 313B
Material Safety Data Sheets
- G. American National Standard Institute (ANSI)
 - Z9.2-79 Local Exhaust Systems
 - Z87.1-89 Eye and Face Protection
 - Z88.2-80 Practices for Respiratory Protection
- H. International Fire Code Institute
Uniform Fire Code (UFC) 1994 UFC Standards
- I. National Fire Protection Association (NFPA)
NFPA 701 (1989) Fire Tests for Flame-Resistant Textiles and Films

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APPENDIX D
ABATEMENT PROCEDURES (OSHA REGULATIONS)

ACRONYMS AND ABBREVIATIONS

ACBM	asbestos-containing building material
ACM	asbestos-containing material
AHERA	Asbestos Hazard Emergency Response Act
DOD	Department of Defense
ECHOS	Environmental Cost Handling Options and Solutions
EL	elbow (of a pipe fitting)
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
GPS	Global Positioning System
HVAC	heating, ventilation, and air conditioning
MIC	Metlakatla Indian Community
MPL	Metlakatla Power and Light
NBS	National Bureau of Standards
NEA	negative exposure assessment
NVLAP	National Voluntary Laboratory Accreditation Program
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
PEL	permissible exposure limit
PLM	polarized light microscopy
PNA/WA	Pacific Northern/Western Airlines
QA	quality assurance
RACM	regulated asbestos-containing material
SM	surfacing material
T	tee (of a pipe fitting)
TSCA	Toxic Substances Control Act
TSI	thermal system insulation
USCG	U.S. Coast Guard
VORTAC	Very High Frequency Omnidirectional Range Tactical Air Navigation

UNITS OF MEASURE

CF	cubic foot
EA	each
f/cc	fibers per cubic centimeter
LF	linear foot
SF	square foot

U.S.D.O.L.
Occupational Safety and Health Administration

Standard Number: 1926.1101 Construction
Standard Title: Asbestos
Subpart Number: Z
Subpart Title: Toxic and Hazardous Substances

(a) Scope and application. This section regulates asbestos exposure in all work as defined in 29 CFR 1910.12 (b), including but not limited to the following:

- (1) Demolition or salvage of structures where asbestos is present;
- (2) Removal or encapsulation of materials containing asbestos;
- (3) Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos;
- (4) Installation of products containing asbestos;
- (5) Asbestos spill/emergency cleanup; and
- (6) Transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed.
- (7) Coverage under this standard shall be based on the nature of the work operation involving asbestos exposure.

(b) Definitions.

"Aggressive method" means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

"Amended water" means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

"Asbestos" includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, "asbestos" includes PACM, as defined below.

"Asbestos-containing material (ACM)", means any material containing more than one percent asbestos.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Authorized person" means any person authorized by the employer and required by work duties to be present in regulated areas.

"Building/facility owner" is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

"Certified Industrial Hygienist (CIH)" means one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

"Class I asbestos work" means activities involving the removal of TSI and surfacing ACM and PACM.

"Class II asbestos work" means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

"Class III asbestos work" means repair and maintenance operations, where "ACM", including TSI and surfacing ACM and PACM, is likely to be disturbed.

"Class IV asbestos work" means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

"Clean room" means an uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

"Closely resemble" means that the major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

"Competent person" means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f); in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).

"Critical barrier" means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

"Decontamination area" means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

"Demolition" means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Disturbance" means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting

away small amounts of ACM and PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

"Employee exposure" means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

"Equipment room (change room)" means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

"Fiber" means a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

"Glovebag" means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

"High-efficiency particulate air (HEPA) filter" means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

"Homogeneous area" means an area of surfacing material or thermal system insulation that is uniform in color and texture.

"Industrial hygienist" means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

"Intact" means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

"Modification for purposes of paragraph (g)(6)(ii)." means a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a "modification" for purposes of paragraph (g)(6) of this section.

"Negative Initial Exposure Assessment" means a demonstration by the employer, which complies with the criteria in paragraph (f)(2)(iii) of this section, that employee exposure during an operation is expected to be consistently below the PELs.

"PACM" means "presumed asbestos containing material".

"Presumed Asbestos Containing Material" means thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to paragraph (k)(5) of this section.

"Project Designer" means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. Sec. 763.90(g).

"Regulated area" means: an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos.

exceed or there is a reasonable possibility they may exceed the permissible exposure limit. Requirements for regulated areas are set out in paragraph (c) of this section.

"Removal" means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

"Renovation" means the modifying of any existing structure, or portion thereof.

"Repair" means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

"Surfacing material" means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes).

"Surfacing ACM" means surfacing material which contains more than 1% asbestos.

"Thermal system insulation (TSI)" means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

"Thermal system insulation ACM" is thermal system insulation which contains more than 1% asbestos.

(c) Permissible exposure limits (PELS)

- (1) Time-weighted average limit (TWA). The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA), as determined by the method prescribed in Appendix A to this section, or by an equivalent method.
- (2) Excursion limit. The employer shall ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air (1 f/cc) as averaged over a sampling period of thirty (30) minutes, as determined by the method prescribed in Appendix A to this section, or by an equivalent method.

(d) Multi-employer worksites.

- (1) On multi-employer worksites, an employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the employer's work with asbestos and/or PACM, of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other employers are not exposed to asbestos.
- (2) Asbestos hazards at a multi-employer work site shall be abated by the contractor who created or controls the source of asbestos contamination. For example, if there is a significant breach of an enclosure containing Class I work, the employer responsible for erecting the enclosure shall repair the breach immediately.
- (3) In addition, all employers of employees exposed to asbestos hazards shall comply with applicable protective provisions to protect their employees. For example, if employees working immediately adjacent to a Class I asbestos job are exposed to asbestos due to the inadequate containment of such job, their employer shall either remove the employees

from the area until the enclosure breach is repaired; or perform an initial exposure assessment pursuant to (f) of this section.

- (4) All employers of employees working adjacent to regulated areas established by another employer on a multi-employer work-site, shall take steps on a daily basis to ascertain the integrity of the enclosure and/or the effectiveness of the control method relied on by the primary asbestos contractor to assure that asbestos fibers do not migrate to such adjacent areas.
- (5) All general contractors on a construction project which includes work covered by this standard shall be deemed to exercise general supervisory authority over the work covered by this standard, even though the general contractor is not qualified to serve as the asbestos "competent person" as defined by paragraph (b) of this section. As supervisor of the entire project, the general contractor shall ascertain whether the asbestos contractor is in compliance with this standard, and shall require such contractor to come into compliance with this standard when necessary.

(e) Regulated areas

- (1) All Class I, II and III asbestos work shall be conducted within regulated areas. All other operations covered by this standard shall be conducted within a regulated area where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed a PEL. Regulated areas shall comply with the requirements of paragraphs (2), (3), (4) and (5) of this section.
- (2) Demarcation. The regulated area shall be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Signs shall be provided and displayed pursuant to the requirements of paragraph (k)(7) of this section.
- (3) Access. Access to regulated areas shall be limited to authorized persons and to persons authorized by the Act or regulations issued pursuant thereto.
- (4) Respirators. All persons entering a regulated area where employees are required pursuant to paragraph (h)(1) of this section to wear respirators shall be supplied with a respirator selected in accordance with paragraph (h)(2) of this section.
- (5) Prohibited activities. The employer shall ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated area.
- (6) Competent Persons. The employer shall ensure that all asbestos work performed within regulated areas is supervised by a competent person, as defined in paragraph (b) of this section. The duties of the competent person are set out in paragraph (o) of this section.

(f) Exposure assessments and monitoring

- (1) General monitoring criteria.
 - (i) Each employer who has a workplace or work operation where exposure monitoring is required under this section shall perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed.

- (ii) Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee.
 - (iii) Representative 8-hour TWA employee exposure shall be determined on the basis of one or more samples representing full-shift exposure for employees in each work area. Representative 30-minute short-term employee exposures shall be determined on the basis of one or more samples representing 30 minute exposures associated with operations that are most likely to produce exposures above the excursion limit for employees in each work area.
- (2) Initial Exposure Assessment.
- (i) Each employer who has a workplace or work operation covered by this standard shall ensure that a "competent person" conducts an exposure assessment immediately before or at the initiation of the operation to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.
 - (ii) Basis of Initial Exposure Assessment: Unless a negative exposure assessment has been made pursuant to paragraph (f)(2)(iii) of this section, the initial exposure assessment shall, if feasible, be based on monitoring conducted pursuant to paragraph (f)(1)(iii) of this section. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment pursuant to paragraph (f)(2)(iii) of this section, the employer shall presume that employees are exposed in excess of the TWA and excursion limit.
 - (iii) Negative Exposure Assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the employer may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria;
 - (A) Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or
 - (B) Where the employer has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data were obtained during work operations conducted under workplace conditions "closely resembling" the processes, type of material, control methods, work practices, and

environmental conditions used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show that under the conditions prevailing and which will prevail in the current workplace there is a high degree of certainty that employee exposures will not exceed the TWA and excursion limit; or

- (C) The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

(3) Periodic monitoring.

- (i) Class I and II operations. The employer shall conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work, unless the employer pursuant to (f)(2)(iii) of this section, has made a negative exposure assessment for the entire operation.
- (ii) All operations under the standard other than Class I and II operations. The employer shall conduct periodic monitoring of all work where exposures are expected to exceed a PEL, at intervals sufficient to document the validity of the exposure prediction.
- (iii) Exception: When all employees required to be monitored daily are equipped with supplied-air respirators operated in the pressure demand mode, or other positive pressure mode respirator, the employer may dispense with the daily monitoring required by this paragraph. However, employees performing Class I work using a control method which is not listed in paragraph (g)(4)(i), (ii), or (iii) of this section or using a modification of a listed control method, shall continue to be monitored daily even if they are equipped with supplied-air respirators.

(4) Termination of monitoring.

- (i) If the periodic monitoring required by paragraph (f)(3) of this section reveals that employee exposures, as indicated by statistically reliable measurements, are below the permissible exposure limit and excursion limit the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring.
- (ii) Additional monitoring. Notwithstanding the provisions of paragraph (f)(2) and (3), and (f)(4) of this section, the employer shall institute the exposure monitoring required under paragraph (f)(3) of this section whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the permissible exposure limit and/or excursion limit or when the employer has any reason to suspect that a change may result in new or additional exposures above the permissible exposure limit and/or excursion limit. Such additional monitoring is required regardless of whether a "negative exposure assessment" was previously produced for a specific job.

(5) Employee notification of monitoring results.

- (i) The employer shall notify affected employees of the monitoring results that represent that employee's exposure as soon as possible following receipt of monitoring results.
- (ii) The employer shall notify affected employees of the results of monitoring representing the employee's exposure in writing either individually or by posting at a centrally located place that is accessible to affected employees.

(6) Observation of monitoring.

- (i) The employer shall provide affected employees and their designated representatives an opportunity to observe any monitoring of employee exposure to asbestos conducted in accordance with this section.
- (ii) When observation of the monitoring of employee exposure to asbestos requires entry into an area where the use of protective clothing or equipment is required, the observer shall be provided with and be required to use such clothing and equipment and shall comply with all other applicable safety and health procedures.

(g) Methods of compliance.

(1) Engineering controls and work practices for all operations covered by this section. The employer shall use the following engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure:

- (i) Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and PACM, except as provided in paragraph (g)(8)(ii) of this section in the case of roofing material.
- (ii) Wet methods, or wetting agents, to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup, except where employers demonstrate that the use of wet methods is infeasible due to for example, the creation of electrical hazards, equipment malfunction, and, in roofing, except as provide in paragraph (g)(8)(ii) of this section; and
- (iii) Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers except in roofing operations, where the procedures specified in paragraph (g)(8)(ii) of this section apply.

(2) In addition to the requirements of paragraph (g)(1) of this section, the employer shall use the following control methods to achieve compliance with the TWA permissible exposure limit and excursion limit prescribed by paragraph (c) of this section;

- (i) Local exhaust ventilation equipped with HEPA filter dust collection systems;
- (ii) Enclosure or isolation of processes producing asbestos dust;
- (iii) Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;

- (iv) Use of other work practices and engineering controls that the Assistant Secretary can show to be feasible.
 - (v) Wherever the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the permissible exposure limit and/or excursion limit prescribed in paragraph (c) of this section, the employer shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (h) of this section.
- (3) Prohibitions. The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:
- (i) High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
 - (ii) Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
 - (iii) Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM.
 - (iv) Employee rotation as a means of reducing employee exposure to asbestos.
- (4) Class I Requirements. In addition to the provisions of paragraphs (g)(1) and (2) of this section, the following engineering controls and work practices and procedures shall be used.
- (i) All Class I work, including the installation and operation of the control system shall be supervised by a competent person as defined in paragraph (b) of this section.
 - (ii) For all Class I jobs involving the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material; for all other Class I jobs, where the employer cannot produce a negative exposure assessment pursuant to paragraph (f)(2)(iii) of this section, or where employees are working in areas adjacent to the regulated area, while the Class I work is being performed, the employer shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:
 - (A) Critical barriers shall be placed over all the openings to the regulated area, except where activities are performed outdoors; or
 - (B) The employer shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area surveillance during each work shift at each boundary of the regulated area, showing no visible asbestos dust; and perimeter area monitoring showing that clearance levels contained in 40 CFR Part 763, Subpt. E, of the EPA Asbestos in Schools Rule are met, or that perimeter area levels, measured by Phase

Contrast Microscopy (PCM) are no more than background levels representing the same area before the asbestos work began. The results of such monitoring shall be made known to the employer no later than 24 hours from the end of the work shift represented by such monitoring. Exception: For work completed outdoors where employees are not working in areas adjacent to the regulated areas, this paragraph (g)(4)(ii) is satisfied when the specific control methods in paragraph (g)(5) of this section are used.

- (iii) For all Class I jobs, HVAC systems shall be isolated in the regulated area by sealing with a double layer of 6 mil plastic or the equivalent;
 - (iv) For all Class I jobs, impermeable dropcloths shall be placed on surfaces beneath all removal activity;
 - (v) For all Class I jobs, all objects within the regulated area shall be covered with impermeable dropcloths or plastic sheeting which is secured by duct tape or an equivalent.
 - (vi) For all Class I jobs where the employer cannot produce a negative exposure assessment, or where exposure monitoring shows that a PEL is exceeded, the employer shall ventilate the regulated area to move contaminated air away from the breathing zone of employees toward a HEPA filtration or collection device.
- (5) Specific control methods for Class I work. In addition, Class I asbestos work shall be performed using one or more of the following control methods pursuant to the limitations stated below:
- (i) Negative Pressure Enclosure (NPE) systems: NPE systems may be used where the configuration of the work area does not make the erection of the enclosure infeasible, with the following specifications and work practices.
 - (A) Specifications:
 - {1} The negative pressure enclosure (NPE) may be of any configuration,
 - {2} At least 4 air changes per hour shall be maintained in the NPE,
 - {3} A minimum of -0.02 column inches of water pressure differential, relative to outside pressure, shall be maintained within the NPE as evidenced by manometric measurements,
 - {4} The NPE shall be kept under negative pressure throughout the period of its use, and
 - {5} Air movement shall be directed away from employees performing asbestos work within the enclosure, and toward a HEPA filtration or a collection device.
 - (B) Work Practices:

- {1} Before beginning work within the enclosure and at the beginning of each shift, the NPE shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed.
 - {2} Electrical circuits in the enclosure shall be deactivated, unless equipped with ground-fault circuit interrupters.
- (ii) Glove bag systems may be used to remove PACM and/or ACM from straight runs of piping and elbows and other connections with the following specifications and work practices:
 - (A) Specifications:
 - {1} Glovebags shall be made of 6 mil thick plastic and shall be seamless at the bottom.
 - {2} Glovebags used on elbows and other connections must be designed for that purpose and used without modifications.
 - (B) Work Practices:
 - {1} Each glovebag shall be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
 - {2} Glovebags shall be smoke-tested for leaks and any leaks sealed prior to use.
 - {3} Glovebags may be used only once and may not be moved.
 - {4} Glovebags shall not be used on surfaces whose temperature exceeds 150 deg. F.
 - {5} Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum.
 - {6} Before beginning the operation, loose and friable material adjacent to the glovebag/box operation shall be wrapped and sealed in two layers of six mil plastic or otherwise rendered intact.
 - {7} Where system uses attached waste bag, such bag shall be connected to collection bag using hose or other material which shall withstand pressure of ACM waste and water without losing its integrity.
 - {8} Sliding valve or other device shall separate waste bag from hose to ensure no exposure when waste bag is disconnected.
 - {9} At least two persons shall perform Class I glovebag removal operations.
- (iii) Negative Pressure Glove Bag Systems. Negative pressure glove bag systems may be used to remove ACM or PACM from piping.

- (A) **Specifications:** In addition to specifications for glove bag systems above, negative pressure glove bag systems shall attach HEPA vacuum systems or other devices to bag to prevent collapse during removal.
- (B) **Work Practices:**
 - {1} The employer shall comply with the work practices for glove bag systems in paragraph (g)(5)(ii)(B)(4) of this section.
 - {2} The HEPA vacuum cleaner or other device used to prevent collapse of bag during removal shall run continually during the operation until it is completed at which time the bag shall be collapsed prior to removal of the bag from the pipe.
 - {3} Where a separate waste bag is used along with a collection bag and discarded after one use, the collection bag may be reused if rinsed clean with amended water before reuse.
- (iv) **Negative Pressure Glove Box Systems:** Negative pressure glove boxes may be used to remove ACM or PACM from pipe runs with the following specifications and work practices.
 - (A) **Specifications:**
 - {1} Glove boxes shall be constructed with rigid sides and made from metal or other material which can withstand the weight of the ACM and PACM and water used during removal:
 - {2} A negative pressure generator shall be used to create negative pressure in the system:
 - {3} An air filtration unit shall be attached to the box:
 - {4} The box shall be fitted with gloved apertures:
 - {5} An aperture at the base of the box shall serve as a bagging outlet for waste ACM and water:
 - {6} A back-up generator shall be present on site:
 - {7} Waste bags shall consist of 6 mil thick plastic double-bagged before they are filled or plastic thicker than 6 mil.
 - (B) **Work practices:**
 - {1} At least two persons shall perform the removal:
 - {2} The box shall be smoke-tested for leaks and any leaks sealed prior to each use:
 - {3} Loose or damaged ACM adjacent to the box shall be wrapped and sealed in two layers of 6 mil plastic prior to the job, or otherwise made intact prior to the job.

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- {2} Before reuse, the interior shall be completely washed with amended water and HEPA-vacuumed.
 - {3} During use, air movement shall be directed away from the employee's breathing zone within the mini-enclosure.
- (6) Alternative control methods for Class I work. Class I work may be performed using a control method which is not referenced in paragraph (g)(5) of this section, or which modifies a control method referenced in paragraph (g)(5) of this section, if the following provisions are complied with:
 - (i) The control method shall enclose, contain or isolate the processes or source of airborne asbestos dust, or otherwise capture or redirect such dust before it enters the breathing zone of employees.
 - (ii) A certified industrial hygienist or licensed professional engineer who is also qualified as a project designer as defined in paragraph (b) of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall certify in writing that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (g)(4)(ii)(B) of this section.
 - (A) Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the evaluation required in paragraph (g)(6) of this section may be performed by a "competent person", and may omit consideration of perimeter or clearance monitoring otherwise required.
 - (B) The evaluation of employee exposure required in paragraph (g)(6) of this section, shall include and be based on sampling and analytical data representing employee exposure during the use of such method under worst-case conditions and by employees whose training and experience are equivalent to employees who are to perform the current job.
 - (iii) Before work which involves the removal of more than 25 linear or 10 square feet of thermal system insulation or surfacing material is begun using an alternative method which has been the subject of a paragraph (g)(6) of this section required evaluation and certification, the employer shall send a copy of such evaluation and certification to the national office of OSHA, Office of Technical Support, Room N3653, 200 Constitution Avenue, NW, Washington, DC 20210. The submission shall not constitute approval by OSHA.
- (7) Work Practices and Engineering Controls for Class II work.
 - (i) All Class II work shall be supervised by a competent person as defined in paragraph (b) of this section.
 - (ii) For all indoor Class II jobs, where the employer has not produced a negative exposure assessment pursuant to paragraph (f)(2)(iii) of this section, or where during the job, changed conditions indicate there may be exposure above the

PEL or where the employer does not remove the ACM in a substantially intact state, the employer shall use one of the following methods to ensure that airborne asbestos does not migrate from the regulated area:

- (A) Critical barriers shall be placed over all openings to the regulated area; or,
 - (B) The employer shall use another barrier or isolation method which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring which meets the criteria set out in paragraph (g)(4)(ii)(B) of this section.
 - (C) Impermeable dropcloths shall be placed on surfaces beneath all removal activity;
- (iii) [Reserved]
- (iv) All Class II asbestos work shall be performed using the work practices and requirements set out above in paragraph (g)(1)(i) through (g)(1)(iii) of this section.
- (8) Additional Controls for Class II work. Class II asbestos work shall also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed, set out in this paragraph. Where more than one control method may be used for a type of asbestos work, the employer may choose one or a combination of designated control methods. Class II work also may be performed using a method allowed for Class I work, except that glove bags and glove boxes are allowed if they fully enclose the Class II material to be removed.
- (i) For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, the employer has not verified the absence of ACM pursuant to paragraph (g)(8)(i)(I) of this section. The employer shall ensure that employees comply with the following work practices and that employees are trained in these practices pursuant to paragraph (k)(9) of this section:
 - (A) Flooring or its backing shall not be sanded.
 - (B) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) shall be used to clean floors.
 - (C) Resilient sheeting shall be removed by cutting with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.
 - (D) All scraping of residual adhesive and/or backing shall be performed using wet methods.
 - (E) Dry sweeping is prohibited.
 - (F) Mechanical chipping is prohibited unless performed in a negative pressure enclosure which meets the requirements of paragraph (g)(5)(i) of this section.

- (G) Tiles shall be removed intact, unless the employer demonstrates that intact removal is not possible.
 - (H) When tiles are heated and can be removed intact, wetting may be omitted.
 - (I) Resilient flooring material including associated mastic and backing shall be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.
- (ii) For removing roofing material which contains ACM the employer shall ensure that the following work practices are followed:
- (A) Roofing material shall be removed in an intact state to the extent feasible.
 - (B) Wet methods shall be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.
 - (C) Cutting machines shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.
 - (D) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation shall be collected by a HEPA dust collector, or shall be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation shall be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still-wet dust and debris left along the cut line.
 - (E) Asbestos-containing material that has been removed from a roof shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist:
 - {1} Any ACM that is not intact shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it shall either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.
 - {2} Intact ACM shall be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.
 - (F) Upon being lowered, unwrapped material shall be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.

- (G) Roof level heating and ventilation air intake sources shall be isolated or the ventilation system shall be shut down.
 - (H) Notwithstanding any other provision of this section, removal or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming as long as manual methods which do not render the material non-intact are used to remove the material and no visible dust is created by the removal method used. In determining whether a job involves less than 25 square feet, the employer shall include all removal and repair work performed on the same roof on the same day.
- (iii) When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs, where paragraph (g)(8)(ii) of this section applies) the employer shall ensure that the following work practices are followed:
- (A) Cutting, abrading or breaking siding, shingles, or transite panels, shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.
 - (B) Each panel or shingle shall be sprayed with amended water prior to removal.
 - (C) Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.
 - (D) Nails shall be cut with flat, sharp instruments.
- (iv) When removing gaskets containing ACM, the employer shall ensure that the following work practices are followed:
- (A) If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag as described in paragraph (g)(5)(ii) of this section.
 - (B) [Reserved]
 - (C) The gasket shall be immediately placed in a disposal container.
 - (D) Any scraping to remove residue must be performed wet.
- (v) When performing any other Class II removal of asbestos containing material for which specific controls have not been listed in paragraph (g)(8)(iv)(A) through (D) of this section, the employer shall ensure that the following work practices are complied with:
- (A) The material shall be thoroughly wetted with amended water prior to and during its removal.

- (B) The material shall be removed in an intact state unless the employer demonstrates that intact removal is not possible.
 - (C) Cutting, abrading or breaking the material shall be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.
 - (D) Asbestos-containing material removed, shall be immediately bagged or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the work shift.
- (vi) **Alternative Work Practices and Controls.** Instead of the work practices and controls listed in paragraph (g)(8)(i) through (v) of this section, the employer may use different or modified engineering and work practice controls if the following provisions are complied with.
- (A) The employer shall demonstrate by data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used, that employee exposure will not exceed the PELs under any anticipated circumstances.
 - (B) A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall certify in writing, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this standard. The evaluation shall include and be based on data representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.
- (9) **Work Practices and Engineering Controls for Class III asbestos work.** Class III asbestos work shall be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees.
- (i) The work shall be performed using wet methods.
 - (ii) To the extent feasible, the work shall be performed using local exhaust ventilation.
 - (iii) Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, the employer shall use impermeable dropcloths, and shall isolate the operation using mini-enclosures or glove bag systems pursuant to paragraph (g)(5) of this section or another isolation method.
 - (iv) Where the employer does not produce a "negative exposure assessment" for a job, or where monitoring results show the PEL has been exceeded, the employer shall contain the area using impermeable dropcloths and plastic barriers or their equivalent, or shall isolate the operation using a control system listed in and in compliance with paragraph (g)(5) of this section.

- (v) Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where the employer does not produce a "negative exposure assessment" or where monitoring results show a PEL has been exceeded, shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.
- (10) Class IV asbestos work. Class IV asbestos jobs shall be conducted by employees trained pursuant to the asbestos awareness training program set out in paragraph (k)(9) of this section. In addition, all Class IV jobs shall be conducted in conformity with the requirements set out in paragraph (g)(1) of this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM or PACM.
- (i) Employees cleaning up debris and waste in a regulated area where respirators are required shall wear respirators which are selected, used and fitted pursuant to provisions of paragraph (h) of this section.
 - (ii) Employers of employees who clean up waste and debris in, and employers in control of, areas where friable thermal system insulation or surfacing material is accessible, shall assume that such waste and debris contain asbestos.
- (11) Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline coating materials. Notwithstanding any other provision of this section, an employer who complies with all provisions of this paragraph (g)(11) when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof cements, mastics, coatings, or flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous compounds shall be deemed to be in compliance with this section. If an employer does not comply with all provisions of this paragraph (g)(11), or if during the course of the job the material does not remain intact, the provisions of paragraph (g)(8) of this section apply instead of this paragraph (g)(11).
- (i) Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.
 - (ii) All employees performing work covered by this paragraph (g)(11) shall be trained in a training program that meets the requirements of paragraph (k)(9)(viii) of this section.
 - (iii) The material shall not be sanded, abraded, or ground. Manual methods which do not render the material non-intact shall be used.
 - (iv) Material that has been removed from a roof shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground via covered, dust-tight chute, crane or hoist. All such material shall be removed from the roof as soon as is practicable, but in any event no later than the end of the work shift.
 - (v) Where roofing products which have been labeled as containing asbestos pursuant to paragraph (k)(8) of this section are installed on non-residential roofs during operations covered by this paragraph (g)(11), the employer shall

notify the building owner of the presence and location of such materials no later than the end of the job.

- (vi) All removal or disturbance of pipeline asphaltic wrap shall be performed using wet methods.

(h) Respiratory protection.

- (1) General. The employer shall provide respirators, and ensure that they are used, where required by this section. Respirators shall be used in the following circumstances:

- (i) During all Class I asbestos jobs.
- (ii) During all Class II work where the ACM is not removed in a substantially intact state,
- (iii) During all Class II and III work which is not performed using wet methods, provided, however, that respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and the ACM is removed in an intact state.
- (iv) During all Class II and III asbestos jobs where the employer does not produce a "negative exposure assessment".
- (v) During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
- (vi) During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators. (vii) During all work covered by this section where employees are exposed above the TWA or excursion limit.
- (viii) In emergencies.

(2) Respirator selection.

- (i) Where respirators are used, the employer shall select and provide, at no cost to the employee, the appropriate respirator as specified in Table 1 or in paragraph (h)(2)(iii) of this section, and shall ensure that the employee uses the respirator provided.
- (ii) The employer shall select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11.
- (iii) (A) The employer shall provide a tight fitting powered, air-purifying respirator in lieu of any negative-pressure respirator specified in Table 1 whenever:
 - (1) An employee chooses to use this type of respirator; and
 - (2) This respirator will provide adequate protection to the employee.

- (B) The employer shall inform any employee required to wear a respirator under this paragraph that the employee may require the employer to provide a powered, air-purifying respirator in lieu of a negative pressure respirator.

Table 1. — Respiratory Protection for Asbestos Fibers

Airborne Concentration of Asbestos or Conditions of Use	Required Respirator
Not in excess of 1 f/cc (10 X PEL), or otherwise as required independent of exposure pursuant to (h)(2)(iv).	Half-mask air purifying respirator other than a disposable respirator, equipped with high-efficiency filters.
Not in excess of 5 f/cc (50 X PEL)	Full facepiece air-purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 X PEL)	Any powered air-purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1,000 X PEL)	Full facepiece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (1,000 X PEL) or unknown concentration	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.

- Note: a. Respirators assigned for high environmental concentrations may be used at lower concentrations, or when required respirator use is independent of concentration.
- b. A high efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers in diameter or larger.
- (iv) In addition to the above selection criterion, the employer shall provide a half-mask air purifying respirator, other than a disposable respirator, equipped with high efficiency filters whenever the employee performs the following activities: Class II and III asbestos jobs where the employer does not produce a negative exposure assessment; and Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
- (v) In addition to the selection criteria in paragraphs (h)(2)(i) through (iv), the employer shall provide a tight-fitting powered air purifying respirator equipped with high efficiency filters or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self-contained breathing apparatus for all employees within the regulated area where Class I work is being performed for which a negative exposure assessment has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.
- (3) Respirator program.
- (i) Where respiratory protection is used, the employer shall institute a respirator program in accordance with 29 CFR 1910.134(b), (d), (e), and (f).

- (ii) The employer shall permit each employee who uses a filter respirator to change the filter elements whenever an increase in breathing resistance is detected and shall maintain an adequate supply of filter elements for this purpose.
 - (iii) Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.
 - (iv) No employee shall be assigned to tasks requiring the use of respirators if, based on his or her most recent examination, an examining physician determines that the employee will be unable to function normally wearing a respirator, or that the safety or health of the employee or of other employees will be impaired by the use of a respirator. Such employees shall be assigned to another job or given the opportunity to transfer to a different position, the duties of which he or she is able to perform with the same employer, in the same geographical area, and with the same seniority, status, and rate of pay and other job benefits he or she had just prior to such transfer, if such a different position is available.
- (4) Respirator fit testing.
- (i) The employer shall ensure that the respirator issued to the employee exhibits the least possible facepiece leakage and that the respirator is fitted properly.
 - (ii) Employers shall perform either quantitative or qualitative face fit tests at the time of initial fitting and at least every 6 months thereafter for each employee wearing a negative-pressure respirator. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. Qualitative and quantitative fit tests shall be conducted in accordance with Appendix C to this section. The tests shall be used to select facepieces that provide the required protection as prescribed in Table 1 in paragraph (h)(2)(i) of this section.
- (i) Protective clothing.
- (1) General. The employer shall provide and require the use of protective clothing, such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos that exceed the TWA and/or excursion limit prescribed in paragraph (c) of this section, or for which a required negative exposure assessment is not produced, or for any employee performing Class I operations which involve the removal of over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.
 - (2) Laundering.
 - (i) The employer shall ensure that laundering of contaminated clothing is done so as to prevent the release of airborne asbestos in excess of the TWA or excursion limit prescribed in paragraph (c) of this section.
 - (ii) Any employer who gives contaminated clothing to another person for laundering shall inform such person of the requirement in paragraph (i)(2)(i) of this section to effectively prevent the release of airborne asbestos in excess of the TWA and excursion limit prescribed in paragraph (c) of this section.

- (3) Contaminated clothing. Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and be labeled in accordance with paragraph (k) of this section.
- (4) Inspection of protective clothing.
 - (i) The competent person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work.
 - (ii) When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the worksuit shall be immediately replaced.
- (j) Hygiene facilities and practices for employees.
 - (1) Requirements for employees performing Class I asbestos jobs involving over 25 linear or 10 square feet of TSI or surfacing ACM and PACM.
 - (i) Decontamination areas: the employer shall establish a decontamination area that is adjacent and connected to the regulated area for the decontamination of such employees. The decontamination area shall consist of an equipment room, shower area, and clean room in series. The employer shall ensure that employees enter and exit the regulated area through the decontamination area.
 - (A) Equipment room. The equipment room shall be supplied with impermeable, labeled bags and containers for the containment and disposal of contaminated protective equipment.
 - (B) Shower area. Shower facilities shall be provided which comply with 29 CFR 1910.141(d)(3), unless the employer can demonstrate that they are not feasible. The showers shall be adjacent both to the equipment room and the clean room, unless the employer can demonstrate that this location is not feasible. Where the employer can demonstrate that it is not feasible to locate the shower between the equipment room and the clean room, or where the work is performed outdoors, the employers shall ensure that employees:
 - {1} Remove asbestos contamination from their worksuits in the equipment room using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or
 - {2} Remove their contaminated worksuits in the equipment room, then don clean worksuits, and proceed to a shower that is not adjacent to the work area.
 - (C) Clean change room. The clean room shall be equipped with a locker or appropriate storage container for each employee's use. When the employer can demonstrate that it is not feasible to provide a clean change area adjacent to the work area or where the work is performed outdoors, the employer may permit employees engaged in Class I asbestos jobs to clean their protective clothing with a portable HEPA-equipped vacuum before such employees leave the regulated area. Following showering, such employees however must then change into

street clothing in clean change areas provided by the employer which otherwise meet the requirements of this section.

- (ii) Decontamination area entry procedures. The employer shall ensure that employees:
 - (A) Enter the decontamination area through the clean room;
 - (B) Remove and deposit street clothing within a locker provided for their use; and
 - (C) Put on protective clothing and respiratory protection before leaving the clean room.
 - (D) Before entering the regulated area, the employer shall ensure that employees pass through the equipment room.
- (iii) Decontamination area exit procedures. The employer shall ensure that:
 - (A) Before leaving the regulated area, employees shall remove all gross contamination and debris from their protective clothing.
 - (B) Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers.
 - (C) Employees shall not remove their respirators in the equipment room.
 - (D) Employees shall shower prior to entering the clean room.
 - (E) After showering, employees shall enter the clean room before changing into street clothes.
- (iv) Lunch Areas.
 - (1) Whenever food or beverages are consumed at the worksite where employees are performing Class I asbestos work, the employer shall provide lunch areas in which the airborne concentrations of asbestos are below the permissible exposure limit and/or excursion limit.
 - (2) Requirements for Class I work involving less than 25 linear or 10 square feet of TSI or surfacing ACM and PACM, and for Class II and Class III asbestos work operations where exposures exceed a PEL or where there is no negative exposure assessment produced before the operation.
 - (i) The employer shall establish an equipment room or area that is adjacent to the regulated area for the decontamination of employees and their equipment which is contaminated with asbestos which shall consist of an area covered by a impermeable drop cloth on the floor or horizontal working surface.
 - (ii) The area must be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area (as determined by visible accumulations).

- (iii) Work clothing must be cleaned with a HEPA vacuum before it is removed.
 - (iv) All equipment and surfaces of containers filled with ACM must be cleaned prior to removing them from the equipment room or area.
 - (v) The employer shall ensure that employees enter and exit the regulated area through the equipment room or area.
- (3) Requirements for Class IV work. Employers shall ensure that employees performing Class IV work within a regulated area comply with the hygiene practice required of employees performing work which has a higher classification within that regulated area. Otherwise employers of employees cleaning up debris and material which is TSI or surfacing ACM or identified as PACM shall provide decontamination facilities for such employees which are required by paragraph (j)(2) of this section.
- (4) Smoking in work areas. The employer shall ensure that employees do not smoke in work areas where they are occupationally exposed to asbestos because of activities in that work area.
- (k) Communication of hazards.
 - (1) This section applies to the communication of information concerning asbestos hazards in construction activities to facilitate compliance with this standard. Most asbestos-related construction activities involve previously installed building materials. Building owners often are the only and/or best sources of information concerning them. Therefore, they, along with employers of potentially exposed employees, are assigned specific information conveying and retention duties under this section. Installed Asbestos Containing Building Material. Employers and building owners shall identify TSI and sprayed or troweled on surfacing materials in buildings as asbestos-containing, unless they determine in compliance with paragraph (k)(5) of this section that the material is not asbestos-containing. Asphalt and vinyl flooring material installed no later than 1980 must also be considered as asbestos containing unless the employer, pursuant to paragraph (g)(8)(i)(I) of this section determines that it is not asbestos-containing. If the employer/building owner has actual knowledge, or should have known through the exercise of due diligence, that other materials are asbestos-containing, they too must be treated as such. When communicating information to employees pursuant to this standard, owners and employers shall identify "PACM" as ACM. Additional requirements relating to communication of asbestos work on multi-employer worksites are set out in paragraph (d) of this section.
 - (2) Duties of building and facility owners.
 - (i) Before work subject to this standard is begun, building and facility owners shall determine the presence, location, and quantity of ACM and/or PACM at the work site pursuant to paragraph (k)(1) of this section.
 - (ii) Building and/or facility owners shall notify the following persons of the presence, location and quantity of ACM or PACM, at the work sites in their buildings and facilities. Notification either shall be in writing, or shall consist of a personal communication between the owner and the person to whom notification must be given or their authorized representatives:

- (A) Prospective employers applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material;
 - (B) Employees of the owner who will work in or adjacent to areas containing such material;
 - (C) On multi-employer worksites, all employers of employees who will be performing work within or adjacent to areas containing such materials;
 - (D) Tenants who will occupy areas containing such material.
- (3) Duties of employers whose employees perform work subject to this standard in or adjacent to areas containing ACM and PACM. Building/facility owners whose employees perform such work shall comply with these provisions to the extent applicable.
- (i) Before work in areas containing ACM and PACM is begun, employers shall identify the presence, location, and quantity of ACM, and/or PACM therein pursuant to paragraph (k)(1) of this section.
 - (ii) Before work under this standard is performed employers of employees who will perform such work shall inform the following persons of the location and quantity of ACM and/or PACM present in the area and the precautions to be taken to insure that airborne asbestos is confined to the area.
 - (A) Owners of the building/facility;
 - (B) Employees who will perform such work and employers of employees who work and/or will be working in adjacent areas.
 - (iii) Within 10 days of the completion of such work, the employer whose employees have performed work subject to this standard, shall inform the building/facility owner and employers of employees who will be working in the area of the current location and quantity of PACM and/or ACM remaining in the area and final monitoring results, if any.
- (4) In addition to the above requirements, all employers who discover ACM and/or PACM on a worksite shall convey information concerning the presence, location and quantity of such newly discovered ACM and/or PACM to the owner and to other employers of employees working at the work site, within 24 hours of the discovery.
- (5) Criteria to rebut the designation of installed material as PACM.
- (i) At any time, an employer and/or building owner may demonstrate, for purposes of this standard, that PACM does not contain asbestos. Building owners and/or employers are not required to communicate information about the presence of building material for which such a demonstration pursuant to the requirements of paragraph (k)(5)(ii) of this section has been made. However, in all such cases, the information, data and analysis supporting the determination that PACM does not contain asbestos, shall be retained pursuant to paragraph (n) of this section.

- (ii) An employer or owner may demonstrate that PACM does not contain more than 1 percent asbestos by the following:
 - (A) Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM; or
 - (B) Performing tests of the material containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.
- (iii) The employer and/or building owner may demonstrate that flooring material including associated mastic and backing does not contain asbestos, by a determination of an industrial hygienist based upon recognized analytical techniques showing that the material is not ACM.
- (6) At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM and/or PACM, the building owner shall post signs which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.
- (7) Signs.
 - (i) Warning signs that demarcate the regulated area shall be provided and displayed at each location where a regulated area is required to be established by paragraph (e) of this section. Signs shall be posted at such a distance from such a location that an employee may read the signs and take necessary protective steps before entering the area marked by the signs.
 - (ii) (A) The warning signs required by paragraph (k)(7) of this section shall bear the following information.

**DANGER: ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY**
 - (B) In addition, where the use of respirators and protective clothing is required in the regulated area under this section, the warning signs shall include the following:

**RESPIRATORS AND PROTECTION CLOTHING
ARE REQUIRED IN THIS AREA**

- (iii) The employer shall ensure that employees working in and contiguous to regulated areas comprehend the warning signs required to be posted by paragraph (k)(7)(i) of this section. Means to ensure employee comprehension may include the use of foreign languages, pictographs and graphics.

(8) Labels.

- (i) Labels shall be affixed to all products containing asbestos and to all containers containing such products, including waste containers. Where feasible, installed asbestos products shall contain a visible label.
- (ii) Labels shall be printed in large, bold letters on a contrasting background.
- (iii) Labels shall be used in accordance with the requirements of 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard, and shall contain the following information:

**DANGER: CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST CANCER AND LUNG DISEASE HAZARD**

- (iv) [Reserved]
- (v) Labels shall contain a warning statement against breathing asbestos fibers.
- (vi) The provisions for labels required by paragraphs (k)(8)(i) through (k)(8)(iii) of this section do not apply where:
 - (A) Asbestos fibers have been modified by a bonding agent, coating, binder, or other material, provided that the manufacturer can demonstrate that, during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the permissible exposure limit and/or excursion limit will be released, or
 - (B) Asbestos is present in a product in concentrations less than 1.0 percent.
- (vii) When a building owner or employer identifies previously-installed PACM and/or ACM, labels or signs shall be affixed or posted so that employees will be notified of what materials contain PACM and/or ACM. The employer shall attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. Signs required by paragraph (k)(6) of this section may be posted in lieu of labels so long as they contain information required for labelling. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs or labels can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

(9) Employee Information and Training.

- (i) The employer shall, at no cost to the employee, institute a training program for all employees who are likely to be exposed in excess of a PEL and for all

employees who perform Class I through IV asbestos operations, and shall ensure their participation in the program.

- (ii) Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.
- (iii) Training for Class I operations and for Class II operations that require the use of critical barriers (or equivalent isolation methods) and/or negative pressure enclosures under this section shall be the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR Part 763, subpart E, appendix C).
- (iv) Training for other Class II work.
 - (A) For work with asbestos containing roofing materials, flooring materials, siding materials, ceiling tiles, or transite panels, training shall include at a minimum all the elements included in paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to that category. Such course shall include "hands-on" training and shall take at least 8 hours.
 - (B) An employee who works with more than one of the categories of material specified in paragraph (k)(9)(iv)(A) of this section shall receive training in the work practices applicable to each category of material that the employee removes and each removal method that the employee uses.
 - (C) For Class II operations not involving the categories of material specified in paragraph (k)(9)(iv)(A) of this section, training shall be provided which shall include at a minimum all the elements included in paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to the category of material being removed, and shall include "hands-on" training in the work practices applicable to each category of material that the employee removes and each removal method that the employee uses.
- (v) Training for Class III employees shall be consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). Such a course shall also include "hands-on" training and shall take at least 16 hours. Exception: For Class III operations for which the competent person determines that the EPA curriculum does not adequately cover the training needed to perform that activity, training shall include as a minimum all the elements included in paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to that activity, and shall include "hands-on" training in the work practices applicable to each category of material that the employee disturbs.
- (vi) Training for employees performing Class IV operations shall be consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(1). Such a course shall include available information concerning the locations of thermal system insulation and

surfacing ACM/PACM, and asbestos-containing flooring material, or flooring material where the absence of asbestos has not yet been certified; and instruction in recognition of damage, deterioration, and delamination of asbestos containing building materials. Such course shall take at least 2 hours.

- (vii) Training for employees who are likely to be exposed in excess of the PEL and who are not otherwise required to be trained under paragraph (k)(9)(iii) through (vi) of this section, shall meet the requirements of paragraph (k)(9)(viii) of this section.
- (viii) The training program shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraphs (k)(9)(iii) through (vi) of this section, the employer shall ensure that each such employee is informed of the following:
 - (A) Methods of recognizing asbestos, including the requirement in paragraph (k)(1) of this section to presume that certain building materials contain asbestos;
 - (B) The health effects associated with asbestos exposure;
 - (C) The relationship between smoking and asbestos in producing lung cancer;
 - (D) The nature of operations that could result in exposure to asbestos, the importance of necessary protective controls to minimize exposure including, as applicable, engineering controls, work practices, respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures, and any necessary instruction in the use of these controls and procedures; where Class III and IV work will be or is performed, the contents of EPA 20T-2003, "Managing Asbestos In-Place" July 1990 or its equivalent in content;
 - (E) The purpose, proper use, fitting instructions, and limitations of respirators as required by 29 CFR 1910.134;
 - (F) The appropriate work practices for performing the asbestos job;
 - (G) Medical surveillance program requirements;
 - (H) The content of this standard including appendices:
 - (I) The names, addresses and phone numbers of public health organizations which provide information, materials and/or conduct programs concerning smoking cessation. The employer may distribute the list of such organizations contained in Appendix J to this section, to comply with this requirement; and
 - (J) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.
- (10) Access to training materials.

- (i) The employer shall make readily available to affected employees without cost, written materials relating to the employee training program, including a copy of this regulation.
- (ii) The employer shall provide to the Assistant Secretary and the Director, upon request, all information and training materials relating to the employee information and training program.
- (iii) The employer shall inform all employees concerning the availability of self-help smoking cessation program material. Upon employee request, the employer shall distribute such material, consisting of NIH Publication No. 89-1647, or equivalent self-help material, which is approved or published by a public health organization listed in Appendix J to this section.

(l) Housekeeping.

- (1) Vacuuming. Where vacuuming methods are selected, HEPA filtered vacuuming equipment must be used. The equipment shall be used and emptied in a manner that minimizes the reentry of asbestos into the workplace.
- (2) Waste disposal. Asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing consigned for disposal shall be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled, impermeable containers except in roofing operations where the procedures specified in paragraph (g)(8)(ii) of this section apply.
- (3) Care of asbestos-containing flooring material.
 - (i) All vinyl and asphalt flooring material shall be maintained in accordance with this paragraph unless the building/facility owner demonstrates, pursuant to paragraph (g)(8)(i)(I) of this section that the flooring does not contain asbestos.
 - (ii) Sanding of flooring material is prohibited.
 - (iii) Stripping of finishes shall be conducted using low-abrasion pads at speeds lower than 300 rpm and wet methods.
 - (iv) Burnishing or dry buffing may be performed only on flooring which has sufficient finish so that the pad cannot contact the flooring material.
- (4) Waste and debris and accompanying dust in an area containing accessible thermal system insulation or surfacing ACM/PACM or visibly deteriorated ACM:
 - (i) shall not be dusted or swept dry, or vacuumed without using a HEPA filter,
 - (ii) shall be promptly cleaned up and disposed of in leak tight containers.

(m) Medical surveillance.

- (1) General.
 - (i) Employees covered.

- (A) The employer shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit. For purposes of this paragraph, any day in which a worker engages in Class II or Class III operations or a combination thereof on intact material for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in this standard, shall not be counted.
- (B) For employees otherwise required by this standard to wear a negative pressure respirator, employers shall ensure employees are physically able to perform the work and use the equipment. This determination shall be made under the supervision of a physician.
- (ii) Examination.
 - (A) The employer shall ensure that all medical examinations and procedures are performed by or under the supervision of a licensed physician, and are provided at no cost to the employee and at a reasonable time and place.
 - (B) Persons other than such licensed physicians who administer the pulmonary function testing required by this section shall complete a training course in spirometry sponsored by an appropriate academic or professional institution.
- (2) Medical examinations and consultations.
 - (i) Frequency. The employer shall make available medical examinations and consultations to each employee covered under paragraph (m)(1)(i) of this section on the following schedules:
 - (A) Prior to assignment of the employee to an area where negative-pressure respirators are worn;
 - (B) When the employee is assigned to an area where exposure to asbestos may be at or above the permissible exposure limit for 30 or more days per year, or engage in Class I, II, or III work for a combined total of 30 or more days per year, a medical examination must be given within 10 working days following the thirtieth day of exposure;
 - (C) And at least annually thereafter.
 - (D) If the examining physician determines that any of the examinations should be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies specified by the physician.
 - (E) Exception: No medical examination is required of any employee if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

- (ii) Content. Medical examinations made available pursuant to paragraphs(m)(2)(i)(A) through (m)(2)(i)(C) of this section shall include:
 - (A) A medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems.
 - (B) On initial examination, the standardized questionnaire contained in Part 1 of Appendix D to this section, and, on annual examination, the abbreviated standardized questionnaire contained in Part 2 of Appendix D to this section.
 - (C) A physical examination directed to the pulmonary and gastrointestinal systems, including a chest roentgenogram to be administered at the discretion of the physician, and pulmonary function tests of forced vital capacity (FVC) and forced expiratory volume at one second (FEV(1)). Interpretation and classification of chest shall be conducted in accordance with Appendix E to this section.
 - (D) Any other examinations or tests deemed necessary by the examining physician.
- (3) Information provided to the physician. The employer shall provide the following information to the examining physician:
 - (i) A copy of this standard and Appendices D, E, and I to this section;
 - (ii) A description of the affected employee's duties as they relate to the employee's exposure;
 - (iii) The employee's representative exposure level or anticipated exposure level;
 - (iv) A description of any personal protective and respiratory equipment used or to be used; and
 - (v) Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.
- (4) Physician's written opinion.
 - (i) The employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination and shall include:
 - (A) The physician's opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos;
 - (B) Any recommended limitations on the employee or on the use of personal protective equipment such as respirators; and
 - (C) A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.

- (D) A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.
 - (ii) The employer shall instruct the physician not to reveal in the written opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to asbestos.
 - (iii) The employer shall provide a copy of the physician's written opinion to the affected employee within 30 days from its receipt.
- (n) **Recordkeeping.**
 - (1) **Objective data relied on pursuant to paragraph (f) to this section.**
 - (i) Where the employer has relied on objective data that demonstrates that products made from or containing asbestos or the activity involving such products or material are not capable of releasing fibers of asbestos in concentrations at or above the permissible exposure limit and/or excursion limit under the expected conditions of processing, use, or handling to satisfy the requirements of paragraph (f), the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.
 - (ii) The record shall include at least the following information:
 - (A) The product qualifying for exemption;
 - (B) The source of the objective data;
 - (C) The testing protocol, results of testing, and/or analysis of the material for the release of asbestos;
 - (D) A description of the operation exempted and how the data support the exemption; and
 - (E) Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.
 - (iii) The employer shall maintain this record for the duration of the employer's reliance upon such objective data.
 - (2) **Exposure measurements.**
 - (i) The employer shall keep an accurate record of all measurements taken to monitor employee exposure to asbestos as prescribed in paragraph (f) of this section. NOTE: The employer may utilize the services of competent organizations such as industry trade associations and employee associations to maintain the records required by this section.
 - (ii) This record shall include at least the following information:
 - (A) The date of measurement;

- (B) The operation involving exposure to asbestos that is being monitored;
 - (C) Sampling and analytical methods used and evidence of their accuracy;
 - (D) Number, duration, and results of samples taken;
 - (E) Type of protective devices worn, if any; and
 - (F) Name, social security number, and exposure of the employees whose exposures are represented.
- (iii) The employer shall maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.20.
- (3) Medical surveillance.
- (i) The employer shall establish and maintain an accurate record for each employee subject to medical surveillance by paragraph (m) of this section, in accordance with 29 CFR 1910.20.
 - (ii) The record shall include at least the following information:
 - (A) The name and social security number of the employee;
 - (B) A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physician's recommendations.
 - (C) Physician's written opinions;
 - (D) Any employee medical complaints related to exposure to asbestos; and
 - (E) A copy of the information provided to the physician as required by paragraph (m) of this section.
 - (iii) The employer shall ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.20.
- (4) Training records. The employer shall maintain all employee training records for one (1) year beyond the last date of employment by that employer.
- (5) Data to Rebut PACM. Where the building owner and employer have relied on data to demonstrate that PACM is not asbestos-containing, such data shall be maintained for as long as they are relied upon to rebut the presumption.
- (6) Records of Required Notifications. Where the building owner has communicated and received information concerning the identification, location and quantity of ACM and PACM, written records of such notifications and their content shall be maintained by the building owner for the duration of ownership and shall be transferred to successive owners of such buildings/facilities.
- (7) Availability.

- (i) The employer, upon written request, shall make all records required to be maintained by this section available to the Assistant Secretary and the Director for examination and copying.
 - (ii) The employer, upon request, shall make any exposure records required by paragraphs (f) and (n) of this section available for examination and copying to affected employees, former employees, designated representatives, and the Assistant Secretary, in accordance with 29 CFR 1910.20(a) through (e) and (g) through (i).
 - (iii) The employer, upon request, shall make employee medical records required by paragraphs (m) and (n) of this section available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1910.20.
- (8) Transfer of records.
 - (i) The employer shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.20(h).
 - (ii) Whenever the employer ceases to do business and there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director at least 90 days prior to disposal and, upon request, transmit them to the Director.
- (o) Competent person.
 - (1) General. On all construction worksites covered by this standard, the employer shall designate a competent person, having the qualifications and authorities for ensuring worker safety and health required by Subpart C, General Safety and Health Provisions for Construction (29 CFR 1926.20 through 1926.32).
 - (2) Required Inspections by the Competent Person. Section 1926.20(b)(2) which requires health and safety prevention programs to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.
 - (3) Additional Inspections. In addition, the competent person shall make frequent and regular inspections of the job sites, in order to perform the duties set out below in paragraph (o)(3)(i) and (ii) of this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and at any time at employee request. For Class II, III, and IV jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.
 - (i) On all worksites where employees are engaged in Class I or II asbestos work, the competent person designated in accordance with paragraph (e)(6) of this section shall perform or supervise the following duties, as applicable:
 - (A) Set up the regulated area, enclosure, or other containment;
 - (B) Ensure (by on-site inspection) the integrity of the enclosure or containment;

- (C) Set up procedures to control entry to and exit from the enclosure and/or area;
- (D) Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required by paragraph (f) of this section;
- (E) Ensure that employees working within the enclosure and/or using glove bags wear respirators and protective clothing as required by paragraphs (h) and (i) of this section;
- (F) Ensure through on-site supervision, that employees set up, use and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements;
- (G) Ensure that employees use the hygiene facilities and observe the decontamination procedures specified in paragraph (j) of this section;
- (H) Ensure that through on-site inspection, engineering controls are functioning properly and employees are using proper work practices; and.
- (I) Ensure that notification requirement in paragraph (k) of this section are met.

(ii) [Reserved]

(4) Training for the competent person.

- (i) For Class I and II asbestos work the competent person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this standard; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of EPA's Model Accredited Plan (40 CFR part 763, subpart E, Appendix C), such as a course conducted by an EPA-approved or state-approved training provider, certified by EPA or a state, or a course equivalent in stringency, content, and length.
- (ii) For Class III and IV asbestos work, the competent person shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this standard, and the identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content, and length. Competent persons for Class III and IV work, may also be trained pursuant to the requirements of paragraph (o)(4)(i) of this section.

(p) Appendices.

- (1) Appendices A, C, D, and E to this section are incorporated as part of this section and the contents of these appendices are mandatory.

- (2) Appendices B, F, H, I, J, and K to this section are informational and are not intended to create any additional obligations not otherwise imposed or to detract from any existing obligations.
- (q) Dates.
- (1) This standard shall become effective October 11, 1994.
 - (2) The provisions of 29 CFR 1926.58 remain in effect until the start-up dates of the equivalent provisions of this standard.
 - (3) Start-up dates. All obligations of this standard commence on the effective date except as follows:
 - (i) Methods of compliance. The engineering and work practice controls required by paragraph (g) of this section shall be implemented by October 1, 1995.
 - (ii) Respiratory protection. Respiratory protection required by paragraph (h) of this section shall be provided by October 1, 1995.
 - (iii) Hygiene facilities and practices for employees. Hygiene facilities and practices required by paragraph (j) of this section shall be provided by October 1, 1995.
 - (iv) Communication of hazards. Identification, notification, labeling and sign posting, and training required by paragraph (k) of this section shall be provided by October 1, 1995.
 - (v) Housekeeping. Housekeeping practices and controls required by paragraph (l) of this section shall be provided by October 1, 1995.
 - (vi) Medical surveillance required by paragraph (m) of this section shall be provided by October 1, 1995.
 - (vii) The designation and training of competent persons required by paragraph (o) of this section shall be completed by October 1, 1995.

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